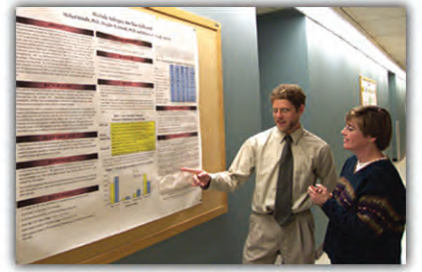


www.uab.edu/graduate



UAB

The University of Alabama at Birmingham
Graduate Catalog 2014-2015

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Graduate

Welcome to the UAB Graduate School

We offer doctoral, post-masters education specialist, and master's level programs, spanning across the disciplines.

The UAB Graduate School seeks to nurture skills that transcend disciplinary boundaries, preparing graduate students to participate successfully in professional and academic arenas. With coordinated and interdisciplinary degree programs available, the UAB Graduate School offers students an opportunity to tailor their educational experience to their own career objective.

Grad About UAB

Over four decades, UAB has evolved from an academic extension center into an autonomous, comprehensive urban university and academic health center within the University of Alabama System. UAB has established wide-ranging programs in six liberal arts and professional schools and six health-professional schools, with graduate programs serving all major units. The University has seen record overall enrollment for five consecutive years, with more than 18,500 students in Fall 2013. Classes are offered seven days a week.

UAB is situated near downtown Birmingham and the historic Five Points South district. The campus stretches across 86 square blocks and occupies more than 100 primary buildings. UAB is Alabama's largest single-site employer, with more than 23,000 employees and an economic impact exceeding \$5 billion annually on the state.

General Information

Role Statement

UAB's undergraduate instructional programs are broad-based and designed to serve the needs of a diverse student body without sacrificing a strong general education foundation. Programs range from the liberal arts and sciences to professionally oriented studies, including business, education, engineering, and the health disciplines. UAB's graduate offerings are shaped by its location in the state's largest metropolitan area, by its mandate to serve a large and heterogeneous constituency, by its responsibility to contribute to the economic and professional development of Birmingham and the state, and by its role of providing support to a nationally recognized academic health sciences center.

At the graduate level, programs serve the career needs of educators and business leaders, as well as those involved in advancing the frontiers of the health sciences. Training for health professionals is available through programs at the baccalaureate, master's, doctoral, and professional degree levels.

UAB also has the primary responsibility for meeting the state's health professional needs. It offers a comprehensive range of programs which encompass both basic preparation and sophisticated graduate and specialty training in medicine, dentistry, optometry, nursing, the health professions, and public health.

As one of the nation's leading research institutions, UAB emphasizes both basic and applied research. Although the majority of the university's research effort is in the biomedical sciences and related areas, all instructional programs are expected to participate in research activities. UAB's urban setting necessitates the development of research programs that are responsive to the city's economic, social, and cultural needs. Much of the research conducted at UAB is interdisciplinary in nature and is organized through centers that bring together experts in a number of related fields to concentrate on a particular problem or issue. UAB attracted more than \$454 million in external research funding in 2012 and currently ranks 21st in funding from the National Institutes of Health. UAB also ranks in the Carnegie Foundation's highest tier for research activity and in the "community engagement" classification, the only university in the state to hold both designations.

As the senior public doctoral-level institution in the state's major urban area, UAB is also committed to providing comprehensive programs in continuing education consistent with the quality and diversity of its

other offerings. The university's faculty, staff, and students also serve as resources to the area through activities related to professional, economic, and cultural growth and development.

Cultural Opportunities

UAB's urban location offers students unique cultural opportunities. Located within walking distance of the campus is the Five Points South district, where ethnic-style restaurants, shops, art galleries, and music clubs are located. Not far from campus are the Birmingham Museum of Art, the Civil Rights Institute, the historic Alabama Theater, and the Birmingham-Jefferson Convention Complex. Other nearby sites include Sloss Furnace, a post-Civil War iron foundry which has been converted into a museum and informal music hall, and Oak Mountain Amphitheater, an outdoor facility that features music-industry headliners during the spring and summer concert season.

UAB also has a flourishing arts program. As many as 30 major music events are produced each season at UAB, in addition to numerous theater productions and student and professional art exhibitions. The Alys Robinson Stephens Performing Arts Center is a state-of-the-art facility which now houses a 1,400-seat concert hall, a 350-seat theater, and a 150-seat recital hall, and eventually will house a fine arts computer center, a band room, electronic music laboratories, practice rooms, and rehearsal hall. The Center regularly schedules nationally and internationally known artists and orchestras and features faculty and student productions and concerts.

Student Life

Graduate students at UAB have many opportunities to become involved in the life of the university. Information about additional groups, both on and off campus, can be found in the UAB Student Handbook, *Direction* at <http://www.uab.edu/handbook>. Such organizations include: Graduate Student Association (GSA), Black Graduate Student Association (BGSA) and Graduate Career Awareness and Trends (GCAT).

The University of Alabama System

The University of Alabama was foreseen in the Constitutional Convention in Huntsville, Alabama Territory, on July 5, 1819. At the second session of the General Assembly, December 18, 1819, an act was passed establishing a seminary of learning "to be denominated the University of Alabama." The university opened for admission of students on April 18, 1831, in Tuscaloosa. All public buildings except the observatory were burned by federal cavalrymen on April 4, 1865. Erection of new buildings began in January 1867 and classroom instruction resumed in April 1869.

During the first half of the twentieth century and in addition to its regular educational programs at the Tuscaloosa campus, the university began to offer additional educational opportunities to residents in urban communities throughout Alabama. Extension centers, offering both day and evening classes, were established in Birmingham, Huntsville, Montgomery, Mobile, Dothan, and Gadsden. The Birmingham and Huntsville centers evolved into new university campuses, which were established in addition to the Tuscaloosa campus.

In September 1966, all university operations in Birmingham were designated as the University of Alabama in Birmingham (UAB) by the University of Alabama Board of Trustees. This action established the University of Alabama in Birmingham as one of the three major campuses of the university. The University of Alabama in Huntsville had been initiated as a four-year school in 1964.

In June 1969, the campuses were given autonomy within the framework of the University of Alabama System, each having its own administrative structure with a president as the chief executive officer. A chancellor was appointed in June 1976 as chief administrative officer of the system. In 1984, the name of the University of Alabama in Birmingham was changed to the University of Alabama at Birmingham.

Schools and Degrees

This catalog contains information about graduate programs in the College of Arts and Sciences, School of Business, School of Dentistry, School of Education, School of Engineering, School of Health Professions, School of Nursing, School of Optometry, School of Public Health and the Joint Health Sciences.

Most UAB graduate students are working toward a degree; however, some have other educational goals. Graduate level degrees are usually characterized by the level of master's, specialist or doctoral.

College of Arts & Sciences

Master of Arts

English
 Anthropology⁵
 Art History¹
 Communication Management
 History
 Sociology
 Psychology

Master of Public Administration

Master of Science

Biology
 Chemistry
 Computer and Information Sciences
 Computer Forensics and Security Management
 Criminal Justice
 Forensic Science
 Mathematics
 Physics

Doctor of Philosophy

Applied Mathematics²
 Biology
 Chemistry
 Computer and Information Sciences
 Medical Sociology
 Physics
 Psychology

School of Education

Master of Arts in Education

Arts Education
 Early Childhood Education
 Educational Leadership
 Elementary Education
 English as a Second Language
 Health Education
 High School Education
 Kinesiology

Reading
 Special Education

Master of Arts in Counseling

Counseling

Educational Specialist

Educational Leadership
 Early Childhood Education
 Elementary Education
 English as a Second Language
 Secondary Education
 Special Education: Autism Spectrum Disorder
 Teacher Leadership

Doctor of Education

Educational Leadership¹

Doctor of Philosophy

Early Childhood Education
 Health Education Promotion¹

School of Business

Master of Accounting

Master of Business Administration

School of Engineering

Master of Science

Biomedical Engineering
 Civil Engineering
 Engineering
 Electrical Engineering
 Materials Engineering
 Mechanical Engineering

Doctor of Philosophy

Biomedical Engineering
 Civil Engineering³
 Computer Engineering⁴
 Interdisciplinary Engineering
 Materials Engineering¹
 Materials Science²

School of Health Professions

Master of Science

Biotechnology
 Clinical Laboratory Science
 Genetic Counseling
 Nutrition Sciences
 Occupational Therapy

Master of Science in Health Administration
Master of Science in Health Informatics
Master of Science in Physician Assistant Studies
Doctorate of Physical Therapy

Doctorate of Science

Administration Health Services

Doctor of Philosophy

Administration Health Services
Nutrition Sciences
Rehabilitation Sciences

School of Nursing

Master of Science in Nursing

Doctor of Nursing Practice

Doctor of Philosophy

School of Optometry

Master of Science

Vision Sciences

Doctor of Philosophy

Vision Sciences

School of Public Health

Master of Public Health

Master of Science in Public Health
Clinical Research
Environmental Health Sciences
Epidemiology
Outcomes Research

Doctor of Public Health

Public Health Management
Outcomes Research
Maternal & Child Health Policy

Doctor of Philosophy

Environmental Health Sciences
Epidemiology
Health Behavior
Bio-statistics

Non-Academic Policies

Equal Opportunity and Discriminatory Harassment Policy

UAB is committed to equal opportunity in education and employment, and the maintenance and promotion of nondiscrimination and prevention of discriminatory harassment in all aspects of education, recruitment and employment of individuals throughout the university.

Immunization Policy

UAB requires that first-time entering students, international students and scholars, and students in health-related schools provide proof of immunization against certain diseases.

Non-Resident Tuition Policy

This policy addresses non-resident tuition, certification of residency status by campus officials, and establishment of campus policies to administer an appeals process.

Drug-Free Campus Policy for Students

Unlawful possession, use, manufacture, distribution, or dispensing of illicit drugs, controlled substances, or alcoholic beverages by any UAB student is prohibited.

Drug-Free Campus Policy for Students - Attachment A

This attachment for the Drug-free Campus Policy for Students outlines the Federal penalties and sanctions for the illegal possession of a controlled substance.

Drug-Free Campus Policy for Students - Attachment B

This attachment to the Drug-free Campus Policy for Students outlines the health risks associated with the use of drugs and alcohol.

Drug Free Campus/Workplace Policy - Attachment B.1

This Attachment to the Drug-Free Campus and Drug-Free Workplace Policies outlines effects related to the consumption of alcohol.

Drug-Free Campus Policy for Students - Attachment C

This attachment to the Drug-Free Campus Policy describes available programs through UAB offering counseling and assistance for drug and alcohol abuse.

Copyright Policy

The University of Alabama at Birmingham (the "University") is dedicated to instruction, research and service to benefit society and encourages its faculty, staff and students to carry out scholarly endeavors in an open and free atmosphere, and to publish the results of such work without restraint, consistent with applicable law and policy.

Patent Policy

UAB encourages the development of procurement and licensing of patents for inventions in the interest of the public, the inventor, and the university.

Data Protection and Security Policy

Data (electronic) created at UAB must be protected and maintained in accordance with all applicable federal and state laws and university policies.

Student E-Mail Address Policy

November 10, 2003

See also:

Electronic Data Processing Security Policy

Acceptable Use Policy

Network Usage Guidelines

Purpose

UAB provides electronic mail resources in support of its instruction, research, and service activities. The purpose of this policy is to establish the use of electronic mail (e-mail) as one of the official methods for communicating with UAB students.

Official Communications Using E-Mail Addresses

In a similar manner as mail distribution of paper communiqués to a student's "permanent" address is considered an official method for distributions to students, so also are official e-mail messages sent by UAB to a student's "@UAB.EDU" e-mail address considered an official distribution method. For purposes of this policy, "official" communiqués or e-mails as used here are those established as "official" through other approval mechanisms in place at UAB.

Student Requirements and Responsibilities

Every student enrolled at UAB must have an e-mail address that ends with "@UAB.EDU". Such an e-mail address is required for a student to register for UAB credit courses. It is the student's responsibility to obtain an official UAB e-mail address in a timely manner from the UAB e-mail registering system (BlazerID World Wide Web site). This will require the student also to have a valid, current, and reliable electronic mailbox through an Internet Service Provider (ISP) or portal or on a server administered by the student's academic department, or on the central mail service provided by the Office of the Vice President for Information Technology. It is

the student's responsibility to check his or her e-mail regularly for distribution of official UAB communiqués. UAB recommends that e-mail be checked at least once a day, when practicable. UAB is not responsible for lost, rejected, or delayed e-mail forwarded by UAB from a student's "@UAB.EDU" address to off campus or unsupported e-mail services or providers. Such lost, rejected, or delayed e-mail does not absolve the student from responsibilities associated with an official UAB communiqué sent to the student's official UAB e-mail address ("@UAB.EDU"). If there is a change in a student's e-mail address to which the "@UAB.EDU" alias address is re-directed, it is the student's responsibility to make the changes in the UAB e-mail registering system.

UAB Responsibilities

UAB will ensure that all students have access to an e-mail account and will provide means for students who do not otherwise have access to e-mail-capable computers to be able to check their e-mail through such mechanisms as computer labs, the UAB libraries, and public terminals. UAB will provide mechanisms to allow students to request that their e-mail addresses not be published in a similar way that other student directory information is not published. However, unpublished e-mail addresses will be used for sending official UAB communiqués to students including communications to a group of students such as a course e-mail list. Students also will be provided mechanisms for requesting that their e-mail addresses not be used for general UAB mailings that are not official communications with students. UAB is not responsible for the handling or mishandling of students' e-mail by non-UAB providers or by unofficial (non-@UAB.EDU) e-mail servers.

Student Records Policy

The University of Alabama at Birmingham student records policy complies with the Family Educational Rights and Privacy Act of 1974, as amended. All students enrolled or previously enrolled at UAB have certain rights with regard to information included in their education records. These rights are the subject of this policy.

[Request to Withhold Directory Information PDF](#)

Trustees & Administration

The University of Alabama System Board of Trustees

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Governor of Alabama

President ex officio

Thomas R. Bice, Ed.D.

State Superintendent of Education

ex officio

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John Russell Thomas

The University of Alabama System Administration

Chancellor

Robert E. Witt, Ph.D.

Secretary of the Board

Michael A. Bownes

The University of Alabama at Birmingham Administration

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Louis Dale, Ph.D., Vice President, Equity and Diversity

William Ferniany, Ph.D., Chief Executive Officer, UAB Health System

Selwyn Vickers, M.D., Senior Vice President and Dean, School of Medicine

Shirley Salloway Kahn, Ph.D., Vice President, Development, Alumni and External Affairs

Richard B. Marchase, Ph.D., Vice President, Research and Economic Development

Richard L. Margison, Vice President, Financial Affairs and Administration

Doug Rigney, Ph.D., Interim Vice President, Information Technology

Suzanne Austin, Ph.D., Vice Provost for Student and Faculty Success

Harlan M. Sands, J.D., Vice Provost for Administration and Quality Improvement

Iwan Alexander, Ph.D., Dean, School of Engineering

Doreen Harper, Ph.D., RN, Dean, School of Nursing

Eric Jack, Ph.D., Dean, Collat School of Business

Harold P. Jones, Ph.D., Dean, School of Health Professions

Max Michael III, M.D., Dean, School of Public Health

Bryan D. Noe, Ph.D., Dean, Graduate School

Rodney Nowakowski, O.D., Ph.D., Dean, School of Optometry

Robert E. Palazzo, Ph.D., Dean, College of Arts and Sciences

Michael Reddy, D.M.D., D.M.SC. Dean, School of Dentistry

Deborah Voltz, Ed.D., Dean, School of Education

Brent Gage, Ph.D., Associate Provost for Enrollment Management

Gregg M. Janowski, Ph.D., Associate Provost for Assessment and Accreditation

Grad Academic & Student Resources

UAB provides a variety of services and resources to guide students through their academic careers.

Admission

UAB welcomes applications from all individuals whose preparation and abilities give them a reasonable chance of success in its programs. All applicants must offer acceptable evidence of ability and intent to meet the academic standards of the university. Degree-seeking graduate students are those accepted into a specific graduate program to work toward a specific advanced degree. In addition to the completed online application, the application procedure includes the submission of official transcripts, standardized test scores, and letters of recommendation. Each application is reviewed by the graduate program faculty, who make an admissions recommendation to the Graduate School Dean or a representative of the Graduate Dean.

Credentials and documentation required for admission vary by program. To be considered official, all academic documents required for admission must be mailed to UAB directly from the colleges/universities attended, and testing agencies. All credentials submitted as part of the application for admission become and remain the property of the university and will not be returned to the student, duplicated, or transferred to another institution.

Any change in a student's record prior to enrollment will necessitate a new review of the application. Any omissions or misrepresentations on a student's application for admission will automatically invalidate consideration by and acceptance to UAB. If, after a student is admitted to the university, information comes to light that indicates an applicant did not meet all admission requirements, the applicant's offer of admission will be rescinded.

The application for admission, application instructions, and application deadlines can be accessed at <http://www.uab.edu/graduate/current-students/prospective-students>.

Readmission

The records of students, who have not registered for courses for one year or more, will be removed from the UAB computerized registration system. Such students must apply for readmission before they may register again. Degree-seeking students who

1. Were admitted to a UAB Graduate Degree-Seeking Program within the last five years, and
2. Have not registered for courses for one academic year (3 semesters) or more BUT have registered for and successfully passed at least one graduate course at UAB after being admitted to a UAB Graduate Degree-Seeking Program, and
3. Have not attended any other university or college in the interim, and
4. Wish to return to the graduate program to which he or she was earlier admitted, must fill out the Application for Readmission to Graduate Degree Program form and pay the appropriate fee.

These readmitted students must meet the degree requirements operative at the time of readmission. Students who wish to return to the non-degree

category after an absence of one or more years must submit a new non-degree online application, an official transcript confirming the award of a bachelor's degree, and the required processing fee. These forms can be obtained online at <http://www.uab.edu/graduate/online-forms>.

Admission as a Non-Degree Student

The non-degree category serves students who do not wish to pursue a graduate degree at UAB, as well as those who wish to begin graduate study before being admitted to a degree program. Not all graduate courses are open to non-degree seeking graduate students. Although there is no limit to the number of credit hours that may be earned as a non-degree seeking student, should a student later wish to pursue an advanced degree at UAB, the credit earned while in non-degree seeking status is not automatically acceptable toward the degree. A request for transfer of non-degree seeking credits will not be considered until the student has completed at least 9 semester hours of graduate credit in the current UAB program and is in good academic standing. **In no case can more than 12 semester hours earned as a non-degree graduate student be applied toward an advanced degree at UAB.**

Because of U.S. immigration requirements, international applicants (i.e., those who are neither U.S. citizens nor permanent residents) cannot normally be considered for the non-degree category unless already residing in the United States. Immigration laws should be consulted to determine eligibility of international students. Unless otherwise stated, the policies in this section apply to both degree-seeking and non-degree seeking graduate students. Information on applications for admissions can be found on the Graduate School Web site (<http://www.uab.edu/graduate/current-students/prospective-students>).

Change from Non-Degree to Degree Status

A student with a non-degree classification who wishes to change to a degree-seeking classification must apply via the degree-seeking application and submit the required documents (transcripts, entrance test score, recommendation letters, etc.). Degree-seeking admission of non-degree students is neither automatic nor guaranteed.

Concurrent Degrees

Students who do not qualify for a combined degree program but wish to begin work toward a second advanced degree may earn up to 12 semester hours in the additional program (without special permission) while simultaneously earning credit toward the original degree. However, **no more than 12 semester hours earned in the first degree program may ever be applied toward the second degree.**

Admission as an Auditor

Applicants who wish to audit credit courses must follow standard admission procedures and meet minimum admission requirements.

Equal Opportunity Policy

UAB administers its educational programs and activities, including admission, without regard to race, color, religion, sex, sexual orientation, age, national origin, disability unrelated to job performance or Vietnam-era or disabled veteran status. The full text of this policy can be found <http://sppublic.ad.uab.edu/policies/Pages/default.aspx>.

Office of Graduate Admissions

Mailing Address for Documents and Credentials:

G03 Lister Hill Library
1720 2nd Avenue South
Birmingham, AL 35294-0013

Physical Address:

1700 University Boulevard
Birmingham, Alabama 35294-0013
(205) 934-8227
gradschool@uab.edu

New Student Orientation

Invitation from Dean Bryan Noe

Irrespective of whether you are a new or a continuing graduate student at UAB, learning everything you will need to know from the first day in your graduate program to the day your degree is granted will often seem like a daunting task. In addition to what is provided by your graduate program, the links on the "Grad Info" web page include a lot more information that will be helpful both as you start your graduate studies, and later as you work toward completing your degree requirements. We hope that you find the information in this online tool useful throughout your sojourn at UAB

The new graduate student orientation "Grad Info" page can be found at <http://www.uab.edu/graduate/current-students/grad-info>.

Student Life Activities and Organizations

Graduate students at UAB have many opportunities to become involved in the life of the university. Information about additional groups, both on and off campus, can be found in the UAB Student Handbook, *Direction* at <http://www.uab.edu/handbook/> as well as the *Graduate Student Handbook* at http://www.uab.edu/graduate/images/acrobat/publicaitons/UAB_Grad_Handbook.pdf

UAB Student Life would like to invite you to complete your UAB experience by becoming involved in the many activities and organizations available to you as a student. Events range from relaxing at free movies or comedy shows, involvement in student governance, cheering on the Blazers, writing for the Kaleidoscope student newspaper, rappelling down a cliff, hiking the Grand Canyon and so much more. Each semester brings new events, new organizations, opportunities to make friends, get physically fit, learn, socialize, relax, and have a good time becoming a part of the Blazer community! We want you to get involved!!

This section of the catalog contains an alphabetical list of many of the activities and organizations and activities available to students.

Contact Us:

Student Life

205-934-4175
studentlife@uab.edu
Physical Address:
1715 Building
1715 9th Avenue South

Student Life Departments:

Athletic Team Support

205-975-5376
teamsupport@uab.edu
Physical Address:
Campus Rec Center, Room 190
1501 University Boulevard

Student Activities

205-934-8225
studentprograms@uab.edu
Physical Address:
Campus Rec Center, Room 190
1501 University Boulevard

Student Engagement

205-975-9509
engagement@uab.edu
Physical Address:
1715 Building
1715 9th Avenue South

Student Involvement

205-934-8020
getinvolved@uab.edu
Physical Address:
Campus Rec Center, Room 190
1501 University Boulevard

Student Media

205-975-9509
uabpublications@uab.edu
Physical Address:
Pita Stop Building
1106 12th Avenue South

Student Multicultural & Diversity Programs

205-934-8020
diversity@uab.edu
Campus Rec Center, Room 190
1501 University Boulevard

Student Organizations

205-975-5376
bsync@uab.edu
Campus Rec Center, Room 190

1501 University Boulevard

UAB graduate students are represented by the Graduate Student Association (GSA), which works closely with the Graduate School and other offices of the university administration in formulating policies and meeting student needs. All graduate students are automatically members of the GSA, and the GSA Senate is composed of student representatives from the various graduate programs. The GSA provides partial funding for graduate student travel to professional meetings. The organization co-sponsors a variety of services and activities, including the Honors Convocation, Graduate Student Research Days, Graduate Student Orientation, and the GSA Emergency Loan Fund. Information on the Graduate Student Medical Assistance Fund and travel grants may be obtained on the GSA Web site (www.uab.edu/gsa).

The Black Graduate Student Association (BGSA) was founded in 1993 and is dedicated to the pursuit of academic excellence and social and political awareness with respect to African-Americans at UAB.

The BGSA sponsors social events, pertinent forums dedicated to issues of interest in the African-American community at our Black Lecture Series "Meeting of the Minds," activism opportunities, and an annual conference. For detailed information about the BGSA, visit the Web site at <http://www.uab.edu/bgasa/>.

The UAB GCAT, previously called the Industry Roundtable, is sponsored by the UAB Graduate School. The GCAT is a student-initiated and student run informal discussion group open to all graduate students and dedicated to fostering a greater awareness of career opportunities outside academia. Its goals are to provide a forum for networking with industry representatives; establish an interface between academia and industry; introduce students to the process of making industry contacts; encourage students to comment, ask questions, and seek advice from non-academics; stimulate students to begin career development early in their educational experience; and provide information to students about career opportunities outside academe. More information regarding the GCAT can be found at <http://www.uab.edu/gcat/>.

Graduate Student Research Days (GSRD) is an annual competition in which graduate students present their original research in an open forum. Information regarding participating in the GSRD competition is available at the GSRD Web site (www.uab.edu/graduate/researchday).

UAB Student Life would like to invite you to complete your UAB experience by becoming involved in the many activities and organizations available to you as a student. Events range from relaxing at free movies or comedy shows, involvement in student governance, cheering on the Blazers, writing for the Kaleidoscope student newspaper, rappelling down a cliff, hiking the Grand Canyon and so much more. Each semester brings new events, new organizations, opportunities to make friends, get physically fit, learn, socialize, relax, and have a good time becoming a part of the Blazer community! We want you to get involved!!

This section of the catalog contains an alphabetical list of many of the activities and organizations and activities available to students.

Contact Us:

Student Life

205-934-4175

studentlife@uab.edu

Physical Address:

1715 Building

1715 9th Avenue South

Student Life Departments:

Athletic Team Support

205-975-5376

teamsupport@uab.edu

Physical Address:

Campus Rec Center, Room 190

1501 University Boulevard

Student Activities

205-934-8225

studentprograms@uab.edu

Physical Address:

Campus Rec Center, Room 190

1501 University Boulevard

Student Engagement

205-975-9509

engagement@uab.edu

Physical Address:

1715 Building

1715 9th Avenue South

Student Involvement

205-934-8020

getinvolved@uab.edu

Physical Address:

Campus Rec Center, Room 190

1501 University Boulevard

Student Media

205-975-9509

uabpublications@uab.edu

Physical Address:

Pita Stop Building

1106 12th Avenue South

Student Multicultural & Diversity Programs

205-934-8020

diversity@uab.edu

Campus Rec Center, Room 190

1501 University Boulevard

Student Organizations

205-975-5376

bsync@uab.edu

Campus Rec Center, Room 190

1501 University Boulevard

Student Services & Facilities

This page contains a list of facilities and services available to UAB students. For further information on these and other facilities and activities, contact the UAB Information Center, located in the Residence Life Center at Blazer Hall or refer to the UAB student handbook,

Direction, at <https://www.uab.edu/students/> and on BlazerNET on the Student Resources tab.

Barnes & Noble at UAB

Barnes & Noble at UAB is located at 1218 6th Avenue South. The bookstore posts official lists of UAB courses and stocks the textbooks and all other items necessary for successful UAB coursework. Most textbooks can be purchased new or used. The option to rent textbooks is also available for some courses. The bookstore has entered into an agreement with Microsoft to offer name brand computer software to students, faculty and staff at substantially reduced prices. The bookstore carries study aids, reference materials, school and office supplies; the largest assortment of medical reference books in the Southeast; medical instruments, lab coats, and scrubs; and the largest assortment of UAB logo apparel and gifts available. Contact Barnes & Noble at UAB at (205) 996-2665 or visit the store online at <http://uab.bncollege.com>

Birmingham Area Consortium for Higher Education (BACHE) Library Cooperation

The Birmingham Area Consortium for Higher Education (BACHE) consists of UAB, Birmingham-Southern College, Miles College, the University of Montevallo, and Samford University. Students, faculty, and staff at BACHE institutions may access the resources of all member libraries by simply presenting their valid ID cards. It is best for students to discuss research projects first with the reference staff at UAB's library before using other member libraries. The rules and regulations of the lending library are in effect.
<http://www.uab.edu/bache/>

Campus Restaurants

Craving the sort of canned fruit, mystery meat and slightly doughy roll glop you struggled to choke down all the way through elementary school? Sorry, we can't help. Instead, think delicious food, wide variety, good prices, lots of places. Conveniently located within walking distance of classes, residence halls, many off-campus apartments and the Campus Recreation Center, UAB Campus Restaurants offers delicious food at a great value with an inviting atmosphere where you can hang out with friends.

Overlooking the campus green and located between the Campus Recreation Center and Blazer Hall, the **Commons on the Green** offers something for everyone! The Commons isn't just a dining hall, y'all—it's a dining experience. It is at once a source of nourishment and of entertainment. Choose your cuisine from the Commons' offerings of grilled foods, deli favorites, pizza and pasta, classic homestyle flavors, international delicacies, vegan offerings, and soups and salads. Breakfast and lunch are priced a la carte—eat what you want, pay for what you eat—and dinner and weekend brunches are all-you-care-to-eat. And it's pretty! A modern yet comfortable interior, a panoramic view of the Campus Green, and free wifi give you a reason to linger over lunch, stop by for a study session, or just relax after class and/or hang out with friends. Upstairs **The Diner** is the ideal late night hang out open from 2pm until 2am daily. Enjoy a burger and a milkshake or shop for snacks and room essentials in the C-Store.

Walking around campus, stop in at **ZeBi** in the Business and Engineering Complex to pick up a freshly made sandwich, organic fruit teas, or a snack on the go. Take a study break and visit **Starbucks** in Mervyn Sterne Library for a quick coffee fix. Heading to the gym? Make sure to stop at the **PowerZone** to grab a bottle of water and stay properly

hydrated. Visit the Learning Resource Center and stop in **Einstein Bros Bagels** for fresh baked bagels, schmears, coffee, sandwiches and more.

For more information about Campus Restaurants, please stop by the UAB Campus Restaurants office located on the top floor of the Commons on the Green next to the Diner, or call (205) 996-6567. You can also visit us online at <http://www.uab.edu/dining/>.

UAB Campus Restaurants Locations

For updated hours of operation visit: <http://www.uab.edu/dining/locations>

Mervyn H. Sterne Library

The Mervyn H. Sterne Library is located at 917 South 13th Street. Named in memory of the late Birmingham philanthropist and civic leader Mervyn H. Sterne shortly after it opened in 1973, the facility has special collections, seminar rooms, group study rooms, lockable study carrels, computers, color and black and white printers, copiers, and seating for 1,350 users. Sterne Library houses a collection of more than a million items selected to support teaching and research at UAB. In addition to books and periodical subscriptions, the collection consists of microforms and other print and non-print materials. Sterne Library provides electronic access to the contents of over 35,044 serials and 72,000 electronic books.

Sterne Library's Web site is a portal to everything library related. The online catalog provides rapid access to the Sterne Library collection as well as other major library collections in Alabama. There are many resources on Sterne Library's Web site, such as the *Undergraduate Research Toolkit*, subject- and course-specific research guides, and a list of FAQs.

The first floor of Sterne Library was renovated in 2010 to make it even more patron-friendly. The Library now has additional computers, collaborative study spaces, more group study rooms, the University Writing Center, and a Starbucks. Sterne Library is open until 2:00 A.M. most days, and during final exams, it is open for 24-hour periods to accommodate students' late hours. See Sterne Library's home page for the week's hours of operation.

Reference services are provided by general and subject-specialist librarians. The Reference Desk is staffed during most library hours to assist patrons in identifying and locating materials and information. Reference services include research assistance, citation clinics, scheduled classes, help locating and using microforms, and interlibrary loan.

The User Services Department, through its automated circulation system, tracks materials continuously and can determine the location or status of a book. This department is also responsible for managing the individual and group study rooms. The Reserve Desk circulates high-use materials placed on reserve by instructors.

Through reciprocal borrowing agreements, UAB students and faculty may use library facilities at a number of other colleges and universities in the area. For additional information, inquire at the Reference or Circulation Desks.

Telephone numbers: (205) 934-6364 (Reference Services), (205) 934-4338 (User Services), and (205) 934-6360 (Administrative Office)

Library home page: <http://www.mhsl.uab.edu/>

Lister Hill Library of the Health Sciences

The Lister Hill Library of the Health Sciences, established in 1945, is the largest biomedical library in Alabama and one of the leading such libraries in the South. It serves as a resource library in the National Network of Libraries of Medicine for the Southeast/Atlantic Region. Access to electronic resources is available across campus and remotely to authorized users. The library provides a variety of reference and educational services plus extensive educational opportunities through one-on-one instruction at point of need or in scheduled workshops on using library resources or searching for information. To contact the library for assistance, see <http://www.uab.edu/lister/ask/>.

Reynolds Historical Library

The Reynolds Historical Library, located on the 3rd floor of the Lister Hill Library of the Health Sciences, was a gift of Dr. Lawrence Reynolds, a distinguished radiologist and editor. The growing collection includes over 13,000 rare books and manuscripts pertaining to the history of medicine and science, dating from the 14th to the early 20th centuries.

Physical Education and Recreation Facilities

Physical education and recreation facilities are open to all UAB students upon presentation of a valid UAB ID card. Faculty, staff and alumni have the option to purchase memberships at the Campus Recreation Center. Students, faculty, staff, and alumni may also purchase household memberships for those residing in their immediate household.

Tennis Courts

UAB maintains 4 lighted tennis courts on campus at the block of 16th Street and 11th Ave South. Students, faculty, and staff can access the courts by using their UAB ID card. All cards must be programmed by the campus card office for students and at UAB Physical Security for faculty and staff. For more information concerning the courts please call 934-5008.

Track Field

Also enclosed and lighted, this field covers the entire block of 12th Street and 6th Ave South. This field primarily serves the Blazer Football and Track team practices, Intramural flag football, ultimate Frisbee competition and physical education classes. It is surrounded by a quarter mile, synthetic running track and is also equipped with a field events area. For further information concerning this area please call 934-5008.

George C. Wallace Physical Education Complex

Primary function is for physical education credit classes and athletic department practices and training. It is located at 608 13th Street South. For more information please call 934-5008.

Smolian International House

The Bertha and Joseph Smolian International House, 1600 10th Avenue South, offers services and activities for international students and scholars. Known as the I-House, it provides a focal point for programs and activities designed to foster a free exchange of information and international understanding. The facility includes meeting space for campus groups, as well as community groups having an international

purpose. For additional information or a schedule of activities, call (205) 934-3328.

<https://www.uab.edu/students/international>

University Writing Center

Dedicated to helping students improve those critical writing and communication skills, the Writing Center assists students across all UAB disciplines at all levels, from freshmen to dissertators. Located on the first floor of Sterne Library, the center offers one-on-one and group tutoring sessions. Making an appointment is recommended, though walk-ins are welcomed. Additional resources through the center include computer stations, small-group workrooms, and a large classroom for writing workshops.

One Stop

What if you could get answers to your questions about your student account, financial aid and registration all in one place?

Stop running from office to office and make the One Stop your first and possibly your only stop! If we can't help you on the spot, we'll do the leg-work for you or connect you to the appropriate resource.

Contact us by email, phone, or in person.

One Stop Student Services, Residence Life Center of Blazer Hall, 920 16th Street South

onestop@uab.edu

(205) 934-4300, 855-UAB-1STP (822-1787)

8:00 am - 5:00 pm, Monday - Thursday

9:00 am - 5:00 pm, Friday

Information Center

Information regarding programs, services, and activities at UAB is available at the UAB Information Center. Referrals to the appropriate department, office, or person may be made for more specific information. The Information Center is located in the main lobby of the Residence Life Center of Blazer Hall, 920 16th Street South. For additional information, call (205) 934-8000, or see the Web page at <https://www.uab.edu/students/services/item/1021-info-center>

ONE Card

The UAB ONE Card serves as the official student ID and offers access to a variety of services and resources on campus. Students use their ONE Card to enter residence halls and the Campus Recreation Center, attend UAB athletic and cultural events and check out materials from UAB libraries. With their ONE Card, students can enjoy discounts on software purchases at the Barnes & Noble UAB Bookstore and tickets to a variety of on and off-campus events through the UAB ticket office. The ONE Card also functions as a debit card, allowing students a convenient and secure way to pay for goods and services at a variety of on campus and local area merchant locations.

General information about the UAB ONE Card, including a list of carding locations, is available at www.uab.edu/onecard. Note: A photo ID is required to have your initial ONE Card made.

Information about services available to students through their ONE Card is available at www.uab.edu/campuscard. Questions can be directed to CampusCard staff at campuscard@uab.edu or (205) 996-6273.

Career & Professional Development Services

UAB Career & Professional Development Services exists to engage students in the career development process of **exploring** career options, gaining **experience** in a chosen field, **preparing** for the job search, and **succeeding** in their career goals. Our services begin the moment students are admitted to UAB and extend to alumni status. Career & Professional Development Services' offers the following resources and programs to successfully prepare you to enter the competitive job market or graduate school:

- Career Consulting
- Career Action Plan
- Job Listings & On-Campus Interviews
- Career Assessments
- Career Fairs, Seminars & Workshops
- Experiential Education (co-op, internships, mentoring, job shadowing & volunteering)
- Career Management Courses

Managing your career is a lifelong, exciting process you need to begin NOW! Please visit us at the main office at the 936 Building, 936 19th Street South, or the four satellite offices in the School of Business, Engineering, Health Professions, and Public Health or visit us online at <https://www.uab.edu/careerservices/>

Explore ~ Experience ~ Prepare ~ Succeed Disability Support Services

Disability Support Services (DSS), located in the 9th Avenue Office Building, serves as the central campus resource for students with disabilities. The goal of DSS is to provide a physically and educationally accessible university environment that ensures an individual is viewed on the basis of ability, not disability. DSS staff members work individually with students to determine appropriate accommodations. To be eligible for services, students need to complete an application, submit documentation of their disability and meet with our counseling staff.

For more information, contact Disability Support Services at (205) 934-4205 (voice) or 934-4248 (TTY) or <http://www.uab.edu/students/services/disability-support-services> E-mail contacts are welcome at dss@uab.edu.

Physical Address

9th Avenue Office Building
1701 9th Avenue South

Mailing Address

OB9A Ste 100
1720 2nd Avenue South
Birmingham, AL 35294

Student Health & Wellness Center

The Student Health & Wellness Center (SHWC) provides a comprehensive and integrated program of services to meet the medical, counseling and wellness needs of UAB's undergraduate, graduate and professional students. Creating a healthy campus and promoting student wellness are essential to supporting student learning and success. The SHWC is staffed by a group of committed medical providers, counselors, nurses, clinicians, wellness specialists, and support staff who embrace

the opportunity to meet your wellness, medical and counseling needs. Those services and resources are available in the new state-of-the-art Student Health & Wellness Center (scheduled to open Fall 2014) located at 1714 9th Ave. South (LRC building), Birmingham, AL 35294-1270.

Blazer Express has convenient drop-off and pick-up locations near the Student Health & Wellness Center. Patient and client parking is available at the South entrance to the building.

Health Services

The SHWC Health Services offer comprehensive primary care services including acute and chronic care, women's health, mental health evaluation and treatment, immunizations, and treatment of minor emergencies. On-site lab and x-ray services are available. After-hour's consultation is provided through provider on call coverage, 24 hours a day/7 days a week/365 days a year. To ensure convenience and access, the Health Services operates under an open-access appointment scheduling system. Go to our website for more information or call (205) 934-3581 to schedule an appointment. All currently enrolled UAB undergraduate and graduate students have access to medical office visits, evaluation and development of a treatment plan at no additional cost beyond the payment of regular UAB tuition, regardless of insurance coverage. Diagnostic testing (lab and x-ray) is available on a fee-for-service basis and can be billed to the student's insurance or, for those without insurance, directly to the student. A more complete listing of no-cost services and those services available, but at additional cost, can be accessed at <http://www.uab.edu/studenthealth/health-plan-eligibility/plan-coverage>.

Counseling Services

The SHWC Counseling Service assists in developing students' potential in physical, academic, spiritual, psychosocial, emotional, and vocational areas. In addition to individual and couples counseling, the staff offers a variety of wellness programs, group opportunities, and educational resources. Confidential counseling services are available to all currently enrolled UAB students at no cost. Psychiatric services are also available. For more information call (205) 934-5816. Counseling services are also provided by the UAB Women's Center.

Women's Center

The Women's Center offers personal (non-academic) counseling services to currently enrolled UAB students. The services are confidential and are provided by a Licensed Professional Counselor at no cost. In addition to counseling, the center provides educational outreach on sexual assault, sexual harassment, eating disorders, and other mental health issues that affect women. For further information or to schedule an appointment call (205) 934-6946.

Student Insurance Coverage (Mandatory and Optional)

In addition to services provided at the SHWC, select academic programs have a mandatory requirement to have major medical health insurance to ensure coverage for hospital, emergency room, specialty physician care and diagnostic testing. For more information on the mandatory insurance coverage requirement go the SHWC website at <http://www.uab.edu/studenthealth/insurance-and-waivers/mandatory-insurance-waivers>.

Viva Health offers an optional Student Health Insurance Plan for full-time registered undergraduate students taking a minimum of 12 credit hours and non-health related graduate students taking a minimum of 5 credit hours. The plan may be extended to cover the student's

spouse and dependents for an additional premium. Please visit www.vivaemployer.com for more information.

To learn more about services available through the Student Health and Wellness Center, please visit www.uab.edu/studenthealth or contact us at one of the following phone numbers for assistance.

Appointments:

Health Services (205) 934-3581

Counseling Services (205) 934-5816

Women's Center (205) 934-6946

Office Hours

Day	Hours
Monday - Friday	8:00 a.m. - 12:00 p.m. and 1:00 - 5:00 p.m.

Immunizations

Day	Hours
Monday - Friday	8:00 - 11:30 a.m. and 1:00 - 4:30 p.m.

The Student Health & Wellness Center is closed daily from 12 pm to 1 pm for lunch.

International Recruitment and Student Services

The Office of International Recruitment and Student Services (IRSS) is committed to providing quality services and programs to recruit, retain and support the UAB international community.

IRSS assists with recruitment of international students, assists with international admissions, advises foreign students and visiting international faculty and staff in matters of immigration and federal and state taxation, and provides orientation and support programs to facilitate the transition to the UAB and Birmingham community. IRSS also serves as a collaborative resource to facilitate, promote, and strengthen international understanding on campus and throughout the Birmingham community.

International Recruitment and Student Services also operates the Smolian International House. For additional information, call (205) 934-3328 or visit our Web page at <https://uab.edu/students/international>.

University Academic Success Center

The University Academic Success Center provides students with the planning, preparation and skills needed for academic success through the following programs.

Supplemental Instruction

Supplemental Instruction is an academic support program involving a series of weekly review sessions for students taking historically difficult courses. Sessions are designed to reinforce the content of the course while developing course-specific problem solving skills and test preparation strategies. Attendance in Supplemental Instruction sessions is voluntary and free of charge.

Study Strategy Sessions

Designed to help students identify their individual learning style preferences and develop efficient study practices, these sessions are led by trained peer leaders. Additional topics of discussion may include time management, note taking and test preparation. Open to any student with an interest in improving their study practices, these sessions are offered each term and are free of charge.

Peer Academic Coaching

Academic Coaches assist students in gaining a better understanding of the learning process and reinforce skills and behaviors necessary for academic success. While study strategy sessions focus on study techniques, academic coaching sessions focus on empowering students to implement those techniques consistently. Topics for exploration may include motivation, self-discipline, and perseverance.

Peer Mentors

Peer Mentors are UAB undergraduate students who help and keep College of Arts and Sciences' first year students connected to the university and supported through their transition to UAB, through their first year experience class.

Tutoring

Available in a variety of disciplines such as the natural sciences, social sciences, business, and foreign languages, tutoring is available by appointment and on a drop-in basis.

For more information or to make an appointment, stop by Room 242 of the Education building, 901 13th Street South, or please call 934-8184. You can also find the Office for Student Academic Success online at: <http://www.uab.edu/students/academics/student-success>

Parking

All students who desire to park in UAB student parking facilities must purchase a permit from Parking and Transportation Services. Permits can be purchased by the term or for the academic year (September through August). Location and fees vary according to lot. Contact Parking and Transportation Services at (205) 934-3513, for details, or visit online at <http://www.uab.edu/parking/>.

Both the university and the City of Birmingham issue citations in student lots to vehicles illegally parked or not displaying a proper permit. Students are responsible for paying all fines and fees imposed. If a student is a member of the parking system, any delinquent ticket payments will be added to his or her account in the Student Accounting Office. If a student is not a member of the parking system and accumulates three or more delinquent tickets, the student's vehicle may be immobilized or impounded at his or her expense.

Handicapped spaces are conveniently located throughout campus. A valid handicap permit must be displayed to park in a handicapped space in addition to the applicable parking permit. All state issued handicap parking permits MUST be registered with the UAB Parking Office in order to park in a restricted UAB lot or deck.

For additional information and a campus parking map, contact:

UAB Parking and Transportation Services

608 Eighth Street South • Telephone (205) 934-3513 • E-mail: uabparking@uab.edu • Website: <http://www.uab.edu/parking/>

Peer Mentoring Program for First Year Students

The UAB Peer Mentoring Program is designed to keep first year students connected to the university and supported through their transition to UAB during the time immediately following Goin' Green New Student Orientation through the end of their first semester. The program is a joint initiative of the Office of New Student Orientation and the Office for Student Academic Success.

Placement Test

The UAB Testing Office provides individual placement testing. Group testing is also available at times and locations listed each term in the UAB Class Schedule. For further information, contact the Testing Office, 936 Building, 936 19th Street South (205) 934-3704.

<http://www.uab.edu/testing/>

Student Academic Success Hotline at (205) 934-6139

The UAB Student Academic Success hotline is a resource for students to help find academic support services. The hotline provides personal assistance for students who are having difficulties but don't know where to get help.

TRIO Academic Services

Fully funded by the U.S. Department of Education, TRIO Academic Services (Student Support Services) offers assistance to UAB's degree-seeking undergraduate students who are either first generation college students (neither parent has a bachelor's degree), are low-income, or have a disability. The program seeks to increase eligible students' chances of graduating from UAB in four years. Students participate in the program from their entrance to UAB as freshmen or sophomores until graduation.

Intensive services are provided during the freshman and sophomore years; fewer services are provided during the junior and senior years. Services offered include free tutoring from freshman courses through senior courses, workshops to improve study skills, computerized basic skills assistance, computer training and usage, counseling and referral, graduate and professional school admission assistance, and educational and cultural activities. Students also receive a UAB-funded incentive stipend that increases yearly, culminating in \$1,000 to participants who enter the project as freshmen and graduate in four years. Students are required to be full time and complete a minimum of 27 semester hours with at least a 2.0 grade point average each year. Required developmental courses are counted in these 27 semester hours. Students must maintain eligibility for financial aid if needed and participate fully in needed program services.

Priority acceptance is given to conditionally admitted freshmen who are attending UAB for the first time during fall semester. Limited space is available for freshmen and sophomores who are already attending UAB. Applications for the program are accepted from April 1 through July 1 of each year. For additional information, contact TRIO Academic Services <http://www.uab.edu/students/services/trio-academic-services>

UAB Office for Study Away

UAB Office for Study Away offers opportunities for international study either through UAB or non-UAB programs. Programs through the UAB Office for Study Away include various academic disciplines and their complementary courses abroad, and are offered in partnership with UAB academic departments. Study abroad options include work/study abroad, internships, and direct enrollment; short term, semester, and full-year exchanges; and opportunities in cross-cultural training, service, and international health research. Application requirements, enrollment circumstances, possible credits, and deadlines vary according to the program. Contact the UAB Office for Study Away, (205) 975-6611, for further information concerning various programs, the resource room, references for peer consultation and academic advising, and financial aid applicability and contacts.

The UAB Office for Study Away is located in Heritage Hall, rooms 521 and 523. For further information, visit our web site at <http://uab.abroadoffice.net/index.html> or <http://www.uab.edu/students/academics/study-away>

UAB Testing Office

The UAB Testing Office provides testing services for UAB students, prospective students, and the community at large. The following tests and/or services are available:

- Admissions examinations for undergraduate and graduate programs
- American College Testing Program (ACT)
- Scholastic Aptitude Test (SAT)
- Miller Analogies Test (MAT) (acceptable to some graduate programs)
- College Level Examination Program (CLEP)—General and Subject Examinations
- Correspondence examination monitoring
- Professional licensing/certification/registration examinations

For further information on any of the above, contact the UAB Testing Office, 936 Building, 936 19th Street South, Telephone (205) 934-3704.

UAB Ticket Office

The UAB Ticket Office is an excellent source for acquiring the best seats to campus events, including performances at the Alys Stephens Center, and UAB Blazers Football and Basketball. It also serves as the point-of-purchase for events sponsored by the Department of Student Life and other UAB organizations and off-campus agencies. In addition, the UAB Ticket Office offers discounted tickets for Carmike, Regal Cinemas, Rave Motion Pictures, and to most major theme parks across the southeast, including Six Flags over Georgia, Alabama Adventure and Dollywood. Discounts to the major aquariums in the area are also available including: Georgia Aquarium, Tennessee Aquarium and Ripley's Aquarium of the Smokies. First-class postage stamps are also available for purchase (UAB internal requisitions are accepted). For additional information, contact the UAB Ticket Office, located inside One Stop Student Services in the Residence Life Center of Blazer Hall, Telephone: (205) 934-8000. Visit our website <https://www.uab.edu/students/services/item/846-ticket-office>

Veterans Services

UAB Veterans Services (UAB-VS) assists veterans, reservists, guardsmen, and dependents of disabled or deceased veterans to access their educational benefits. UAB-VS serves as a liaison between

the student and the local and federal agencies, including the State Department of Education, Department of Defense, and the Department of Veterans Affairs. The office staff assist students in applying for educational benefits, securing tutorial assistance and obtaining veterans work-study positions. For further information, contact UAB Veterans Services, Smolian International House, Room 233, 1600 10th Avenue South, Telephone (205) 934-8804 or read about our programs and services at <http://www.uab.edu/students/veterans>

Women's Center

The Women's Center offers personal (non-academic) counseling services to currently enrolled UAB students. The services are confidential and are provided by a Licensed Professional Counselor at no cost. In addition to counseling, the center provides educational programs on sexual assault, sexual harassment, eating disorders, and other mental health issues that affect women. The Women's Center supports and encourages women seeking a balanced and meaningful life. For further information, contact:

Women's Center

Suite 150 • Holley-Mears Building • 924 19th Street South • Telephone (205) 934-6946.

Counseling & Wellness

The UAB Counseling & Wellness Center assists in developing students' potential in physical, academic, spiritual, psychosocial, emotional, and vocational areas. In addition to individual and couples counseling, the staff offers a variety of wellness programs, group opportunities, and educational resources. Confidential counseling services are available to all currently enrolled UAB students at no cost. Psychiatric services are also available. For more information, contact the Counseling & Wellness Center at (205) 934-5816.

Student Health Services (SHS)

Community Health Building
930 20th Street South, Suite 221
Birmingham, Alabama 35294-2042

Free parking available on the right side of the building (the arm bar will automatically rise when you pull up and you will be given a code by SHS staff to exit).

All graduate UAB students have access to UAB Student Health Services (SHS) Plan at no additional cost* This access is included as part of tuition and replaces Tier I, Tier II, optional student, and Single Visit Option plans.

All students have access to the SHS regardless of insurance coverage. However, access to SHS does not replace the major medical insurance requirement (BC/BS, VIVA, etc.) for student groups defined below. Health Insurance coverage is part of each program's requirements and is necessary to help cover hospital and ER visits, specialty care, and lab/x-ray costs which are not included in the basic Student Health Services Plan.

Some students at UAB are required to have major medical insurance. More information about these students is available at the following website, <http://www.uab.edu/studenthealth/insurance-and-waiver/mandatory-insurance-waivers>

To learn more about Student Health Services and/or print an enrollment form, please visit <http://www.uab.edu/studenthealth>.

Appointments: (205) 934-3581

Office Hours

Day	Hours
Monday - Thursday	8:00 a.m. - 12:00 p.m. and 1:00 - 5:00 p.m.
Friday	8:00 a.m. - 12:00 p.m. and 1:00 - 4:30 p.m.

Immunizations

Day	Hours
Monday - Thursday	8:00 - 11:30 a.m. and 1:00 - 4:30 p.m.
Friday	8:00 - 11:30 a.m. and 1:00 - 4:00 p.m.

Urgent Care Walk-In Hours (acute illnesses only)

Day	Hours
Weekdays	8:00 - 9:00 a.m. and 1:00 - 2:00 p.m.

Financial Information

Tuition and Fees

Graduate Courses

The Detailed Tuition and Fee Schedule is available online <https://www.uab.edu/students/current/paying-for-college/detailed-tuition-and-fees> > Graduate Programs.

Estimated Tuition and Fees

To ascertain Tuition and Fees Fee Schedule please visit BlazerNET located online at www.uab.edu/blazernet

Deadlines

Student account payment deadlines are available on the Academic Calendar for each term. Fifty percent of your total student account must be paid by the first payment deadline and the entire account balance must be paid in full by the second payment deadline. Payment deadline dates are available on the Academic Calendar located online at <http://www.uab.edu/academiccalendar>.

Penalties

Students who fail to pay by the deadline are subject to substantial late fees. Students with delinquent accounts will not be allowed to register at UAB, and transcript requests will not be honored until all accounts are paid in full. The list of penalties is available online at <http://www.uab.edu/whentopay/penalties>.

How to Pay

Payments can be made via the web with a Blazer ID and Password at www.uab.edu/blazernet. For detailed instructions please visit the website <http://www.uab.edu/images/stuaff/pdf/>

Making_a_payment_in_BlazerNET.pdf. Payments can also be made in Student Accounting Services located on the ground level of the Lister Hill Library. All fees are due by the published deadline, as indicated on the UAB Academic Calendar at <http://www.uab.edu/academiccalendar>. For tuition questions please call Student Accounting Services at (205) 934-3570.

Contact

Student Accounting Services
1700 University Blvd.
GROU Lister Hill Library
Birmingham, AL 35294-0013
(205) 934-3570

Withdrawing from Courses

To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and the UAB Class Schedule and receive a grade of W (withdrawn). The withdrawal period ends at approximately 75% of the academic term. Failure to attend class does not constitute a formal drop or withdrawal.

Withdrawal from courses can only be accomplished using official procedures. The official withdrawal must be completed online in BlazerNET. The student must submit a completed withdrawal form to the Office of the Registrar. This office will date stamp the form and return a copy. These documents should be carefully retained by the student. The date printed on the receipt is the official date of withdrawal.

In extraordinary circumstances, if it is impossible for the student to withdraw online or obtain an official withdrawal form, the student may mail a withdrawal letter to the Office of the Registrar. The official date of withdrawal will be the date the letter is received in this office. If the official date of withdrawal is after the last day to drop without paying, no tuition or fees will be refunded.

For financial aid purposes, the date of last class attendance will be the official date of withdrawal unless otherwise documented. Note that individual schools may have withdrawal rules in addition to the above.

Withdrawal from a course while a possible violation of the Academic Honor Code is under review will not preclude the assignment of a course grade that appropriately reflects the student's performance prior to withdrawal if the violation is substantiated.

Exceptions

All students are responsible for adhering to UAB's academic policies, as published in the UAB Graduate Catalog and the current UAB Class Schedule. The Graduate Dean may make exceptions to policies. Exceptions will only be made in extraordinary circumstances. Only in cases of serious illness, which precludes a student from attending classes, or a call to active military service, can a student qualify under this policy for either administrative or academic withdrawal from courses from that semester. In such instances, students requesting an exception to policy must provide the cause specific documentation in order for the request to be considered.

Requests are evaluated only from written documentation and not through appointments or telephone calls. Information and forms are available online at <http://www.uab.edu/graduate/images/acrobat/forms/acadappeal.pdf>. Requests for exceptions must be submitted at the earliest possible time. Consideration will not be given to any request submitted later than the term immediately following the term for which the

exception is being requested. A full reduction in tuition and associated fees will be made for appropriately documented serious illnesses or military service activation, which preclude a student from continuing his/her studies at UAB. For students receiving refunds, such refunds will first be applied to any outstanding obligations and to any scholarship, grant, or loan the student has received for that term. A student who is receiving any form of Federal Title IV Financial Aid will be liable for any unearned funds received as determined by the Federal Return of Funds Policy (check with Student Accounting Office for details.)

Failure to adhere to the published drop and withdrawal deadlines (as outlined in the UAB Catalog and the UAB Class Schedule) does not qualify under this policy as an Academic Exception.

Contact

Graduate School
1700 University Boulevard
G03 Lister Hill Library
Birmingham, AL 35294-0013
(205) 934-8227

Financial Aid to Students

Students should apply for financial aid if they need assistance in paying for the cost of education. Students applying for financial aid are considered for all programs for which they are eligible. Assistance generally takes the form of a combination of grant, loan, and employment. The amount of the award is based on the financial need of the student, taking into consideration the student's total expenses and the family's financial circumstances. A nationally recognized method of analysis approved by the federal government is used to determine the family's ability to pay toward the cost of education.

Applying for Financial Aid

Students are encouraged to complete the Free Application for Federal Student Aid (FAFSA) available online at <http://www.fafsa.gov/> in early February. The earliest students can submit the FAFSA is January 1. Instructions and UAB forms are available online at <https://www.uab.edu/students/paying-for-college>. Since some of the aid programs have limited funding, students are encouraged to submit all required forms to the financial aid office by March 1 for financial aid for the following fall to ensure they receive aid from all programs for which they are eligible. In order to meet the tuition and fee deadlines, completed applications should be submitted no later than 45 days prior to the tuition due date. Students must reapply for financial aid each academic year.

Since procedures and rules are subject to change, students interested in applying for financial aid can receive further information online at <https://www.uab.edu/financialaid>.

Contact

Student Financial Aid
finaid@uab.edu
(205)934-8223

Mailing address

Student Financial Aid
1720 2nd Ave South
Birmingham, AL 35294

Financial Aid Programs

Federal College Work-Study Program

Eligible graduate students may work part time and earn money to help pay their educational expenses while attending school. On-campus and off-campus jobs are available in areas related to the student's educational interests.

Federal Perkins Loan

Perkins loans are available to graduate students on a long-term, low-interest basis and are repayable in monthly installments. The total amount of loans made to a graduate student for all years, including any loans received as an undergraduate, may not exceed \$60,000. The interest rate is five percent, and repayment of principal and interest begins nine months after graduation or withdrawal from school.

Federal Direct Unsubsidized Stafford/Ford Loan

This is a non-need-based loan with a fixed rate of 5.41%. Interest must be paid while the student is in school or must be capitalized as agreed upon by the borrower and lender. Repayment of the principal and any capitalized interest begins when the student's enrollment status drops below half time. The maximum annual loan amount is \$20,500.

Federal Direct PLUS Loan for Graduate and Professional Students

This is a non-need-based loan with a fixed rate of 6.41%. Annual loan limits are the cost of living minus other aid.

Student and Faculty Educational Opportunities

Research participation and science education programs administered by Oak Ridge Institute for Science and Education (ORISE).

UAB Financial Information

UAB Graduate Family Assistance Scholarship

Scholarship funds will be provided to graduate students who have family-related financial commitments that would, if not resolved, prevent them from enrolling in a degree-granting graduate program. **ONLY INCOMING STUDENTS WHO ARE ALREADY ACCEPTED INTO A RESEARCH BASED DOCTORAL PROGRAM ARE ELIGIBLE TO APPLY.**

Lister Hill Center for Health Policy fellowship program

The purpose of the Fellowship is to assist in the transfer of health policy and health services research skills to the policy making setting. For 2010, the Center will fund up to two individuals with a stipend amount of \$28,800 per Fellow.

Comprehensive Minority Faculty and Student Development Program (CMFSDP) Fellowships

Graduate Fellowships are available to qualified African American students, newly enrolled at UAB and seeking to earn a Ph.D. degree.

Howard Hughes Medical Institute-funded UAB Hughes Med to Grad Fellowship Program

Graduates of the UAB Howard Hughes Med-Grad Fellowship Program will enter the workforce with the necessary experience in translational research and leadership training to move discoveries effectively between the bench and bedside.

License to Learn Scholarship

UAB National Alumni Society License To Learn Scholarships are designed to provide additional financial aid to currently enrolled, undergraduate and graduate level UAB students.

Joseph F. Volker Alumni Scholarship

In an effort to recognize the accomplishments of currently enrolled UAB students, the UAB National Alumni Society established a scholarship award program named in honor of the late Dr. Joseph F. Volker.

Distinguished Alumni Scholarship

Distinguished Alumni Scholarship The Student Relations Committee established a new scholarship endowment in 1994 to honor the Society's Distinguished Alumni Award recipients.

Dr. Charles A. McCallum International Scholarship

This scholarship is awarded annually to recognize UAB National Alumni Society international chapters located in Thailand and Taiwan, and to honor Dr. Charles "Scotty" McCallum, UAB president emeritus, who helped to establish these two chapters.

BBVA Compass Mortgage Graduate Student Scholarship

For graduate students.

Other Sources of Financial Aid

Funding Links

Revised PHS 398 and PHS 2590 Forms

Community of Science

The Foundation Center

National Science Foundation

NSF Graduate Research Fellowship Program

GrantsNet

ScienceCareers

Academic Position Network

Employment Resources from the Alabama Department of Rehabilitation

Guidance on job searching and lists of available state jobs

NIH Research Training Opportunities

Progress toward a Degree

**** All policies apply to courses regardless of format (e.g., traditional, blended, online...) and for all programs unless explicitly state.**

Steps Toward a Graduate Degree

All UAB graduate students should be aware of Graduate School policies and procedures. Therefore, all graduate students should become familiar with the UAB Graduate Student Handbook. The Handbook is updated annually and is located at http://www.uab.edu/graduate/images/acrobat/publications/UAB_Grad_Handbook.pdf

Part of a student's progress toward a degree is the selection of a graduate faculty chair and thesis/dissertation committee (Plan I only). Graduate faculty membership may be granted by the Dean of the Graduate School to UAB faculty members who demonstrate a high level of competence in teaching and scholarship. Graduate faculty membership is required (a) of all individuals teaching courses for graduate credit and (b) of members of graduate study committees. The faculty members listed within this Catalog may not necessarily have

graduate faculty status. A complete **official** listing of the graduate faculty may be found on the Graduate School website at <http://www.uab.edu/graduate/gradfacist>.

Upon approval by the Graduate School Dean and payment of any outstanding financial obligations to the university, the President confers students' degrees by authority of the Board of Trustees.

Graduate students are generally expected to complete all degree requirements with **5 years of matriculation for master's and 7 years of matriculation for doctoral students**. One extension of these time limits can be requested when mitigating circumstances preclude completion of requirements within 5 years (master's) or 7 years (doctoral). The request for an extension should include a plan and timeline for completion. Such requests require the approval of the student's dissertation committee and graduate program director and must be presented in writing to the Dean of the Graduate School for consideration and approval. Courses taken more than 5 years (master's) or 7 years (doctoral) before graduation may not be applied toward a degree without the approval of the graduate program director and Graduate Dean.

Steps to both the master's and doctoral degrees can be found in the tabs above.

Steps Toward Earning the Master's Degree

- Admission to master's degree program
- Selection of faculty advisor
- Maintenance of good standing
- Appointment of graduate study committee—Plan I (Thesis) only
- IRB and/or IACUC approvals obtained and renewed annually
- Admission to candidacy—at least one semester before graduation is expected—Plan I (Thesis) only
- Application for Degree—no later than 3 weeks after the beginning of the semester in which graduation is expected (see <http://www.uab.edu/graduate/deadline-dates>)
- Production of preliminary version of thesis (Plan I only)
- Defense of thesis (for Plan I only) (see <http://www.uab.edu/graduate/deadline-dates>)
- One PDF of the defended committee-approved thesis (Plan I only) submitted online no later than 2 weeks (10 business days) after the public defense
- Recommendation for degree
- Conferring of degree

Steps Toward Earning the Doctoral Degree

- Admission to doctoral degree program
- Selection of faculty advisor
- Maintenance of good standing
- Appointment of graduate study committee
- Passing of comprehensive examination
- IRB and/or IACUC approvals obtained and renewed annually
- Admission to candidacy—no later than two semesters before expected graduation

- Application for degree—no later than 3 weeks into the expected semester of graduation see <http://www.uab.edu/graduate/deadline-dates>)
- Draft of preliminary version of dissertation
- Review of the draft by committee members
- Revisions made to dissertation in response to committee feedback
- Defense of dissertation (see <http://www.uab.edu/graduate/deadline-dates>)
- A PDF of the defended committee-approved dissertation to UAB/ProQuest submission web site --no later than 2 weeks (10 business days) following the public defense
- Recommendation for degree
- Conferring of the doctoral degree

Completion of a Degree

****All policies apply to courses regardless of format (e.g., traditional, blended, online...) and for all programs unless explicitly stated.**

Completing your graduate degree requires completing all paperwork before the semester deadlines.

During your academic career, it is also important that you are aware of Graduate School policies and procedures that are detailed in the Graduate Student Handbook. The Handbook also provides a detailed checklist for completing a graduate degree.

Graduate School Minimum Course Credit Requirements. In order to earn a master's, specialist, or a doctoral degree, the Graduate School requires minimum course credits for both Plan I (thesis or dissertation) or Plan II (non-thesis or non-dissertation) paths. These requirements are detailed in the Graduate Student Handbook. Graduate program requirements may exceed the Graduate School minimums. Therefore, you should check with your program director for additional program requirements.

Program requirements. It is your responsibility to consult the graduate catalog and meet with your advisor to ensure that you have completed the requirements of your program. Questions about Graduate School requirements not satisfactorily answered on the web site should be addressed to the Graduate School (934-8227)

Application for Admission to Candidacy form. Doctoral students must submit this form before the first day of classes at least two semesters before the semester of intended graduation and be enrolled in research hours during those two semesters. (If you pre-register, this form must be completed before that date.) **Master's students** must submit this form before the first day of classes at least one semester before the semester of intended graduation and be enrolled in research hours during that semester. Admission to candidacy must be submitted and approved by the Graduate School before you can register for research hours (699 or 799). The graduate study committee must be appointed and approved by the Graduate School dean.

IRB and IACUC Approval. If the research involves human or animal subjects, approval from IRB or IACUC must be documented before admission to candidacy can be approved and must be kept current until the research is completed. The student's name must appear on all IRB Approval Forms. For more information regarding IRB (human subjects) requirements, visit <http://www.uab.edu/research/administration/offices/IRB/Pages/home.aspx>. For more information regarding IACUC (animal

subjects) requirements, visit <http://www.uab.edu/research/administration/offices/IACUC/Pages/default.aspx>.

Application for Degree (Master's and Educational Specialist) or Application for Degree (Doctoral). The application for degree must be received in the Graduate School Records Office by the deadline date listed on the Graduate School's website, <http://www.uab.edu/graduate/deadline-dates>; **however, check with your department as some programs have earlier deadline dates for the application for degree and may require the form to be submitted directly to the department (i.e. School of Education).** The \$50 fee will be charged to your student account. This form is your official notification to the Graduate School that you intend to complete graduation requirements that semester. The process of clearing your records for graduation begins with the receipt of this application.

- If your public defense will be held before the 3rd week of classes, you must submit your application for degree earlier. Approval forms, which must be requested 2 weeks before the public defense, cannot be completed until the Application for Degree is processed.
- This application does not carry over into the following semester. Students who do not complete graduation requirements as expected must reapply for the following semester and must register for course hours in that semester. The new application for degree form (approved at the departmental level and submitted to the Graduate School) must be submitted by the posted deadline for that semester. Your records must be checked again, and a new diploma will be ordered. The reorder fee is \$25 and will be charged to your student account.

The following requirements and procedures apply only to students who are completing a thesis or dissertation (Plan 1)

Plan 2 students (non thesis/dissertation) should consult your department concerning requirements for final projects and papers.

Final, public defense. Some programs hold private and public defense meetings; however, the Graduate School is concerned only with the public defense, which must be held **by the posted semester deadline**. An earlier defense date is strongly recommended in order to allow time for completing the final requirements before graduation (i.e., format approval and submission of final document to the Graduate School). Set the date and time of your final defense well in advance and at a time when **all** committee members are able to attend. Determine from your committee members how far in advance of your defense date they require a completed copy of your manuscript for review.

Thesis or dissertation approval forms. No later than 2 weeks before your final defense, submit the on-line request for your approval forms. (Approval forms cannot be completed before the Graduate School has received your application for degree). Fill out this form carefully. Be certain to list the correct **graduate program name** (which often differs from the academic department name). If there have been changes to your committee, these changes must be entered on the Change of Committee Form before your approval forms can be completed. You will be notified via e-mail when your forms are ready to be picked up in the Graduate School office (LHL G03). Check your printed approval forms carefully for accuracy. Your name, the names of your committee members, your program name, and the title of your thesis/dissertation must precisely match your official UAB records.

As soon as possible after your defense, complete any changes or corrections to your manuscript that were requested by your

committee and obtain signatures of all committee members and your program director in blue or black ink on your approval form.

No later than 2 weeks following your public defense, your committee approved thesis or dissertation and all applicable forms are due in the Graduate School. Your document will be reviewed for adherence to format requirements and for consistency in format and style. (See the UAB Format Manual). If you are reprinting a published article or previously published illustrations, you must also submit permission to reprint from the copyright holder. (see Publishing Your Thesis or Dissertation and Editing).

Doctoral Dissertations and Master's Theses are submitted online at <http://dissertations.umi.com/uab/> Follow the online instructions. The UAB Publication Agreement is submitted online. All applicable forms must be received before the document will be reviewed.

Doctoral students are required to take the Graduate School's Exit Survey before the degree will be conferred. After the completed dissertation has been turned in, the student will be notified to complete the survey via Blackboard.

If you have no outstanding fees or grades, the email notification of final approval of your thesis or dissertation completes your graduation requirements. Approximately midway through your final semester, you will receive a letter that contains your Graduation Checklist. Review this letter carefully and keep it for your records to ensure that all graduation requirements are being met. If you have questions about unpaid fees, contact Student Accounting. If you have questions about grades, contact your department. Grades for the final semester are not submitted until the end of the semester.

After your document has been approved by the Graduate School you may...

- Order bound copies of your thesis or dissertation for your personal use. If you want a copy of your signed approval form to be included in your personal copies, you must make copies after they are signed and place them in the copies you send to be bound. The original form is kept in the Graduate School.
- Request a letter of degree verification if required for employment or a post-doctoral appointment. Your grades and student account will be checked at that time and, if appropriate, a letter indicating that you have completed all degree requirements and the date on which your degree will be conferred will be mailed. Details concerning degree verification are included in the instructions you receive with your approval forms.

Note: Students who leave the Birmingham area before the approval process is complete are STILL responsible for ensuring that their own requirements are met before semester deadlines.

Degree is officially conferred when the final copy of your document has been cleared by the Graduate School office and when all records have been cleared. Grades are not cleared until the end of exams in the semester in which you graduate. Once the degree has been officially awarded, degree verification can be obtained through Student Clearinghouse (<http://www.studentclearinghouse.org/>). Official transcripts can be requested through the One Stop Student Services (934-4300 or <http://www.uab.edu/onestop>)

Here are additional sources of information about graduation requirements:

- UAB Format Manual for Theses and Dissertations
- Requirements for the Doctoral Degree
- Requirements for the Master's Degree
- Graduate School staff
- Graduate School Deadlines
- Graduate School Forms

Grad College of Arts & Sciences

Dean: Dr. Robert E. Palazzo

The College of Arts and Sciences includes departments in the arts, humanities, mathematics, social, behavioral, natural and physical sciences.

The College offers 15 degree programs leading to a master's degree and 7 programs leading to a doctoral degree. Traditional programs as well as interdisciplinary and graduate level certificate programs help to keep the College on the leading edge of progressive academic offerings. Situated at the center of an internationally renowned research university and academic medical center, students and faculty in the College of Arts and Sciences have unparalleled opportunities to be part of the innovative and ground-breaking research and creative work that is the signature of UAB.

We offer a student-centered, experiential curriculum designed to prepare students not only for the careers and challenges of the 21st century, but also to be the leaders in the global marketplace of ideas. Students within arts and sciences programs develop the ability to understand diverse perspectives making them better prepared to work creatively and productively with others to solve the most important problems of our times.

Interdisciplinary Programs

Interdisciplinary programs of study are increasingly popular as we realize the benefits of multiple perspectives and methods to advance understanding and improve solutions. Students in the College of Arts and Sciences may pursue formal interdisciplinary programs such as the Master's degree in Computer Forensics and Security Management, which involves faculty from the departments of Computer & Information Sciences and Justice Sciences (College of Arts and Sciences), and the Departments of Management, Information Systems Quantitative Methods, and Accounting & Finance (School of Business).

The Departments of Mechanical Engineering and Art & Art History bring their collective expertise and experience together to offer an interdisciplinary Category A certificate program involving an integrated art and engineering curriculum. The Leonardo Art & Engineering Graduate Certificate program provides cross-disciplinary training in simulation, art, visualization, and virtual reality to students with a BS/BA degree in Arts and Sciences, Engineering, Business, or Healthcare-related disciplines for addressing marketing, education/training, entertainment, product development, and design application demand of the 21st century growth area in 3D and VR technologies.

Computer Forensics and Security Management

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Contact Information

Program Co-Directors:
Dr. Nitesh Saxena

Department of Computer and Information Sciences
CH133
1300 University Blvd.
Birmingham, AL 35294-1170

saxena@cis.uab.edu

Dr. John Sloan
Department of Justice Sciences
UBOB 210
1201 University Blvd.
Birmingham, AL 35294-4562

prof@uab.edu

Dr. Molly Wasko
Department of Management, Information Systems, and Quantitative Methods
BEC 319
1150 10th Ave. South
Birmingham, AL 35294-4460

mwasko@uab.edu

Faculty:

Hasan (Computer and Information Sciences), Johnston (Management, Information Systems, and Quantitative Methods), Pirkelbauer (Computer and Information Sciences), Saxena (Computer and Information Sciences), Savage (Accounting and Finance), Skjellum (Computer and Information Sciences), Sloan (Justice Sciences), Solorio (Computer and Information Sciences), Warner (Computer and Information Sciences, Justice Sciences), Wasko (Management, Information Systems, and Quantitative Methods), Wheeler (Justice Sciences)

Program Information

The Master of Science in Computer Forensics and Security Management (MSCFSM) is an interdisciplinary professional practice graduate program involving faculty from the Departments of Computer & Information Sciences and Justice Sciences (College of Arts and Sciences), and the Departments of Management, Information Systems Quantitative Methods, and Accounting & Finance (School of Business). The program prepares graduate students with backgrounds in criminal justice, computer and information sciences, information systems, information technology, and forensic accounting to practice in the fields of computer forensics and security management, including cybersecurity, information security, IT auditing, and forensic accounting. The program develops in students required skills, including familiarity with industry practices, innovative methods, critical thinking, and problem solving, that are crucial for competitiveness and success in entry- or advanced-level positions in the areas of computer forensics, cybersecurity, information security management, IT audit and fraud detection, and forensic accounting. The program is designed to increase the pipeline of prospective, high-quality, entry- and advanced level employees involved with protecting physical and virtual systems vital to the U.S., whose incapacitation or destruction would have debilitating effects on national security and/or the nation's economy. The program also provides current public and private sector employees an opportunity to obtain advanced high-quality training in the core areas of computer forensics, cybersecurity, information security management, IT auditing, and forensic accounting, to facilitate career advancement.

The program is modeled after traditional MBA programs, where students complete a set of core courses and then choose an area of specialization. In the MSCFSM program, students first complete a set of required courses which include courses in computer forensics/cybercrime investigation, information security management, and ethics. Students then choose an area of specialization in either computer forensics/cybercrime investigation or IT audit/fraud examination. Both specializations include a required field practicum (internship) that is completed with an appropriate public or private sector agency or organization.

Admission Requirements

Students accepted into the program will have graduated with a bachelor's degree from a regionally accredited college or university or recognized university from abroad. Most students accepted into the program will have achieved a minimum overall undergraduate grade point average (GPA) of 3.0 or higher on a 4.0 scale and will have earned a combined score of 310 or higher on the verbal and quantitative sections of the Graduate Record Examination (GRE) or a total score of 550 or higher on the Graduate Management Aptitude Test (GMAT). An Admissions Committee consisting of the Program Directors will screen applicants and make a recommendation to the Graduate School for admission into the program.

Students seeking admission to the program will be accepted from undergraduate programs including criminal justice, computer science, electrical and computer engineering, MIS, IT, business, accounting, as well as other science and social science fields. Students seeking admission to the program, regardless of their specific undergraduate preparation, should have some formal exposure to the core areas of the program including cybercrime and its investigation, IT auditing/forensic accounting; fundamentals of computer and Internet literacy, probability and statistics, computer programming, networking, discrete mathematics/logic, and information security management. Students lacking requisite backgrounds but who meet other minimum admission requirements may be admitted to the program on a contingency basis but required to take a series of prerequisite courses – including courses in computer programming and information systems – that allow them to develop necessary backgrounds to be successful in the program. These courses may include the following (or their equivalent):

Requirements	Hours
CS 201 Introduction to Object Oriented Programming	4
AND the following accompanying laboratory	
CS 201L Introduction to Object Oriented Programming Laboratory	0
CS 250 Discrete Structures	3
IS 204 Introduction to Business Programming	3
AC 200 Principles of Accounting I	3
AND	
AC 201 Principles of Accounting II	3
Total Hours	16

Degree Requirements

A minimum total of 36 semester hours of credits are required for the degree, including 24 hours of required courses, a field practicum (internship) for 3-6 hours, and 9 hours of electives taken in one of two tracks: Cybercrime and Computer Forensics or IT Audit/Fraud Examination.

The curriculum includes:

Requirements	Hours
Required Core Curriculum (27-30 hrs.)	
MBA 613 Information Security Management	3
JS 530 Ethics and Computer Forensics	3
JS 502 Introduction to Computer Forensics	3
JS 675 Law Evidence and Procedure	3
CS 534 Internetworking with TCP/IP	3
CS 536 Copmuter Network Security	3
CS 636 Computer Security	3
CS 592 Special Topics	3
AC 574 Forensic Accounting Practicum	3-6
or JS 696 Graduate Internship in Criminal Justice	
Select one of the following elective tracks:	
The Cybercrime/Computer Forensics Track includes the following courses (9 hrs.):	
JS 515 Investigating Online Crimes	3
CS 537 Cybercrime & Forensics	3
OR	
JS 537 CyberCrime and Forensics	3
CS 594 Special Topics	3
The IT Audit/Fraud Examination track includes the following courses (9 hrs.):	
AC 572 Forensic Accounting and Information Technology Auditing	3
AC 573 Fraud Examination	3
LS 571 Legal Elements of Fraud Investigation	3

Leonardo Art & Engineering Graduate Certificate

Contacts

David Littlefield, PhD
 Professor and Chairman
 littlefield@uab.edu
 Department of Mechanical Engineering
 BEC 257
 1150 10th Avenue South
 Birmingham, AL 35294-4461
 (205) 934-8460

Heather Creel
 Business Officer I
 hcreel@uab.edu
 Department of Mechanical Engineering
 BEC 257
 1150 10th Avenue South
 Birmingham, AL 35294-4461
 (205) 934-8460

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Description

Leonardo da Vinci is recognized as embodying the concept of the Renaissance Man as he was a painter, sculptor, architect, musician, scientist, mathematician, engineer, and inventor - an accomplished artist of the 16th century and a perfect example of interdisciplinary endeavors.

In this spirit of the Renaissance Person, the Departments of Mechanical Engineering and Art & Art History bring their collective expertise and experience together to offer a new interdisciplinary Category A certificate program involving an integrated art and engineering curriculum.

The Leonardo Art & Engineering program crosses traditional boundaries between academic disciplines and forges new collaborations to create a scholar/scientist/artist ready to meet the demands of the 21st century.

The objectives for the program are to:

- Provide cross-disciplinary training in simulation, art, visualization, and virtual reality to students with a BS/BA degree in Arts and Sciences, Engineering, Business, or Healthcare-related disciplines for addressing marketing, education/training, entertainment, product development, and design application demands of the 21st century growth area in 3D and VR technologies.
- Offer a mechanism for the large number of practicing artists, engineers, healthcare professionals, business managers, and game developers in Alabama and Birmingham to acquire additional training and education in simulation, 3D visualization, and VR.
- Provide a specialized education suitable to the needs of in-state, out-of-state, and international students interested in the application of 3D visualization, VR, and simulation to the industry or business segment of their preference. The program will provide the students with highly specialized and marketable skills.

Program Requirements

- Students must be admitted to either Department in either the undergraduate or graduate program or to the UAB Graduate School as a non-degree seeking student. (Undergraduates may begin work on the certificate in their senior year provided they have satisfied prerequisite requirements and obtained approval from the Graduate School to take graduate level courses. A certificate can only be awarded after completion of the BA or BS degree requirements.)
- Students must be admitted to the Leonardo Art & Engineering Certificate program using the degree-seeking application found on the UAB Graduate School Apply Yourself website.
- Certificate requires a minimum of 18 semester hours.
- Relevant courses taken towards the certificate may be applied to the MS degree offered by the Department of Mechanical Engineering or MA degree offered by the Department of Art & Art History.
 - One course, up to three semester hours, may be transferred from another institution. This may be the required course or one of the graduate level courses.
 - Courses taken from UA and UAH by IITS may be applied to certificates

Course Requirements

Total of 18 credit hours, as follows:

Requirements	Hours
ME 521 Introduction to Computational Fluid Dynamics Basics	3
or ME 564 Introduction to Finite Element Method	
ARS 520 Sculpture	3-6
ARS 561 3D Modeling	3
ME 698 Non-Thesis Research	1-12
ARS 588 Seminar in Time Based Media	3
Total Hours	13-27

Anthropology

You must apply for admissions through The University of Alabama (Tuscaloosa) at <http://anthropology.ua.edu/>. In order for a student to enroll in courses at UAB (after applying for admission through UA Tuscaloosa), this process must be followed:

1. Student completes the Cooperative Admission form at <http://www.uab.edu/graduate/images/acrobat/forms/cooperativeadmission.pdf>.
2. Student submits the Cooperative Admission form to the University of Alabama's Graduate Registrar, Beth Yarbrough. Ms. Yarbrough's contact information is beth.yarbrough@ua.edu or (205) 348-8285 or (205) 348-5921.
3. The UA Graduate Registrar then faxes a copy of the approved Cooperative Admission form and a copy of the student's UA admission letter to the UAB Graduate Admission Office to the attention of Susan Banks at (205) 934-8413. Mrs. Banks may be contacted at (205) 934-8227 or snoblitt@uab.edu.
4. After UAB receives the approved Cooperative Admission form from UA, the student will be added to UAB's record system and will then be allowed to register for UAB courses online after obtaining a Blazer ID and creating a strong password.

* Degree awarded by the University of Alabama, UAB's partner in the cooperative degree program

Degree Offered:	M.A.*
Director:	Dr. Chris Kyle
Phone:	(205) 975-6181 or (205) 934-3508
E-Mail:	kyle@uab.edu
Web site:	http://anthropology.ua.edu/

Degree Requirements

The M.A. degree program includes the basic course requirements, a foreign language or research skill requirement, and the fulfillment of the requirements for either a Plan I (Thesis) or Plan II (Nonthesis) degree.

Basic Course Requirements

Course Work

Each student must complete a minimum of 30 credit hours of courses numbered 500 or above. Without special prior approval of the student's advisor, committee, and the director of graduate studies Special Problems courses, including ANTH 691, ANTH 692, ANTH 693, and , cannot be counted towards the minimum 30 hours. (Note that there are additional course requirements for two of the three options outlined below).

Core Curriculum

All students are required to complete satisfactorily a core curriculum composed of one graduate course in at least three of the four fields of anthropology. These three should be chosen from among:

1. Linguistics - ANTH 608 Advanced Linguistic Anthropology (or, at UA, ANT 501 Anthropological Linguistics)
2. Archaeology - ANTH 609 Advanced Archaeological Anthropology (or, at UA, ANT 625 Survey of the History of Archaeology)

3. Socio-cultural anthropology - ANTH 605 Advanced Cultural Anthropology (or, at UA, ANT 636 Social Structure or ANT 641 Culture)
4. Physical anthropology - ANTH 610 Advanced Biological Anthropology (or, at UA, ANT 670 Principles of Physical Anthropology)
5. Additionally, a course in research methodology (e.g., ANT 600 at UA or ANTH 615 at UAB) is required.

Entering students must provide evidence of having passed introductory level courses in each of the four subfields before taking the graduate courses. A student who has not had an introductory course may be required to take or audit the appropriate undergraduate course before enrolling in graduate course in the same subfield. Credits earned from such preparatory course work may not be applied to the 30 credit hour requirement.

Language/Research Skill Competency: Each student is required to demonstrate competency in a foreign language or research skill. This requirement may be satisfied in several ways including:

- Successful completion (meaning a grade of B or better) of at least the second course in a language course sequence such as FR 101/FR 102, GN 101/GN 102, or SPA 101/SPA 102
- Certification of competency by examination from the appropriate language department
- Successful completion of a graduate level statistics course subject to the approval of the chair and the program director.
- Students must get the approval of their advisor before undertaking any of these options. The student will be responsible for furnishing evidence of completion of this requirement to the graduate program director.

M.A. Committee

By the start of the second year of academic work each graduate student will be required to have identified a faculty member willing to serve as permanent advisor and at least three additional faculty members to comprise an M.A. jury. This committee is subject to final approval by the chair and program director and functions as the principal advisory and research project approval board. The committee may include an external member of the Graduate Faculty. (The form for the appointment of a master's thesis committee can be found at http://graduate.ua.edu/academics/forms/committee_thesis.pdf.)

Comprehensive Examinations

All students must take and pass comprehensive examinations on their knowledge of the field of anthropology. The student will take written exams in at least three of the four sub-disciplines. The selection of the three areas will be made in collaboration with the faculty advisor. The entire anthropology faculty will participate in composing the exam questions and evaluating each student's responses. The faculty's evaluations will be communicated to the director of graduate studies and to the department chair. Once the student has successfully completed the comprehensive exams, he or she may file for admission to candidacy (see <http://www.graduate.ua.edu/academics/forms/>).

Interinstitutional Requirement

Students must take at least 6 hours of graduate credit at the University of Alabama (Tuscaloosa) as required by the Interinstitutional MA.

Three Plans of Study for the Master's Degree

In addition to choosing one of the two program options outlined above, the student must satisfy the requirements for one of the following three plans of study. Choice of the plan of study must be made by the student in consultation with the M.A. Committee and the faculty advisor.

Thesis Option

Thirty (30) hours of non-thesis course work, successful completion of the comprehensive examinations, plus a master's thesis. A student electing this plan of study will be required to conceive and execute a research project under the direction of his or her M.A. committee. The student's advisor will convene the committee as necessary to discuss, refine, and approve this plan. After twenty hours of course work are completed, the student may enroll in ANTH 699 Thesis Research. The purpose of this coursework is to provide a structure for supervised contact hours with the student's faculty advisor. Such coursework, including the decision as to the number of contact hours required, must be pre-arranged in consultation with the faculty advisor. Hours completed in ANTH 699 must be over and above the 30-hour minimum.

In preparing a thesis, the student should consult graduate school's guidelines for the preparation and submission of theses and dissertations (at <http://graduate.ua.edu/etd/>).

Students who take the thesis option will present a departmental colloquium based on the results of their research in the final semester in residence. Students should consult their faculty advisor and the director of graduate studies in scheduling and posting advance notice of their colloquia.

Non-thesis Research Project Option

Thirty-six (36) hours of non-thesis course work plus successful completion of one of the following:

- Presentation of a research paper at a national meeting which has been approved in advance by the student's M.A. Committee;
- Acceptance for publication of a research paper submitted to a refereed journal which has been approved in advance by the student's M.A. Committee.

In either case, it will be the responsibility of the student's committee to approve a written draft of the research paper. Approval of the paper will be conveyed in writing to the director of graduate studies and to the department chairman by the student's advisor. Final approval of the research project requirement is at the discretion of the M.A. committee.

Students who elect the research project option will present a departmental colloquium based on the results of their research in the final semester in residence, as specified above under the heading of Thesis Option.

Non-thesis Option by Examination

Thirty-six (36) hours of non-thesis course work and successful completion of written examinations.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
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Deadline for All Application Materials to be in the Graduate School Office:	Rolling admission
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.
Comments	See UA catalog and www.as.ua.edu/art

Contact Information

For detailed information, contact Dr. Chris Kyle, Graduate Program Director, UAB Department of Anthropology, HHB 317, 1401 University Blvd, Birmingham, Alabama 35294-1152.

Telephone 205-975-6181 or 205-934-3508.

E-mail: kyle@uab.edu.

Art History (M.A*)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.A.*
Director:	Dr. Jessica Dallow
Phone:	(205) 934-4941
E-mail:	jdallow@uab.edu
Web site:	www.uab.edu/art

* A program leading to the Master of Arts degree in art history is offered jointly by UAB and the University of Alabama (Tuscaloosa). The MA degree in Art History prepares students for further academic study at the doctoral level or for professional careers in museums, galleries, and other arts-related fields.

Admission Requirements

For admission in good standing, applicants to UAB must meet Graduate School requirements for scholarship and GRE General Test scores. A Minimum GPA of 3.0 (B) is required for acceptance into the program. The applicant should have completed 24 semester hours in art history and related areas such as history, aesthetics, archaeology, and anthropology, although this requirement may be reduced depending on the applicant's background and preparation. It is desirable that an applicant be able to read a foreign language related to the proposed field of study. Students may apply for admission for either the fall or spring semester.

Degree Requirements

Courses

Students must complete 24 semester hours in art history.* Students must take courses in **two** of the following **six** general areas: Medieval Art, Early Modern Art (ca. 1400-1700), Eighteenth-Century/ Nineteenth Century Art, Twentieth-Century/Contemporary Art, South Asian Art, and East Asian Art. It is recommended that students take at least one course outside of these two fields for breadth of knowledge. A maximum of 3 semester hours of independent study will be permitted. Each student

must take ARH 680 Methods and Approaches to the History of Art, which should be taken in the first semester of enrollment in the M.A. program. Each student must take at least 6 semester hours of coursework at the University of Alabama (Tuscaloosa).

* Note: A maximum of 6 of the required hours in art history may be taken in a related field with the concurrence of the joint faculty.

Foreign Language Requirement

By the completion of 15 hours of coursework towards the M.A., students should have met the language requirement of a reading knowledge of one foreign language relevant to the student's area of study, approved by the Graduate Program Director and Faculty Advisor. Students may demonstrate language competency by passing a translation exam administered by the Department of Foreign Languages (French or German) or by passing a 200-level course (i.e. FR 201 or FR 202 or GN 201 or GN 202). For other languages, students must consult with the Graduate Program Director and Faculty Advisor and arrange an appropriate translation exam or course to fulfill the language requirement. Students may not sit for the M.A. exam until the language requirement is completed. A reading knowledge of a second foreign language is strongly recommended.

Comprehensive Examination

For admission to candidacy, the student must pass a comprehensive examination prepared and graded by the joint art history faculty. Written examinations are scheduled twice a year, at the end of fall and spring semesters.

Thesis

The student must present a thesis under the direction of a member of the joint art history faculty. Each student will register for ARH 699 for 6 semester hours of credit. Students must be registered for at least 3 hours of thesis credit (ARH 699) in the semester of graduation.

UAB Faculty:

Cummings, Cathleen
Dallow, Jessica
McPherson, Heather
Turel, Noa

UA-Tuscaloosa Faculty:

Curzon, Lucy
Jones, Tanja
Pagani, Catherine
Stephens, Rachel

Additional Information

Deadline for Entry Term(s):	Fall or Spring Semester
Deadline for All Application Materials to be in the Graduate School Office:	April 1 for Fall, October 1 for Spring
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applications whose native language is not English.)

Additional Requirements: Students must provide a writing sample

Contact Information

For detailed information, contact Dr. Jessica Dallow, Graduate Program Director, UAB Department of Art and Art History:

Telephone 205-934-8974; Fax (205) 996-6986.

E-mail jdallow@uab.edu

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Biology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered	Ph.D., M.S., 5th Year M.S.
Director:	Stephen A. Watts, Ph.D.
Phone:	(205) 934-9685
E-mail:	sawatts@uab.edu
Web site:	http://www.uab.edu/biology/

Program Information

Areas of Specialization

Graduate students in the M.S. and Ph.D. programs in biology may specialize in research activities at all levels of biological organization, with emphases on ecophysiology, cellular and molecular biology, endocrinology, and ecology of aquatic organisms, or on models related to human disease.

Admission

For admission in good standing, applicants must meet the following requirements, in addition to the Graduate School's standards: an undergraduate degree in a biological science, B-level scholarship in all biology courses, two semesters of organic chemistry, two semesters of physics, mathematics through calculus, and a minimum of 152 on both the verbal and quantitative portions of the GRE General Test, and a personal statement of career goals. The graduate program director in biology must approve admission on probation or with deficiencies in one of the above requirements. Three letters of evaluation from individuals who have a thorough knowledge of the applicant's academic abilities and potential are also required. It is strongly recommended that a student contact a mentor before applying. Students may enter at the beginning of any semester, with **deadlines of March 1 for summer and fall applicants and October 15 for spring applicants.**

Coursework, Thesis, and Dissertation

A dissertation embodying the results and analysis of an original experimental investigation is required for Ph.D. candidates. Students in the M.S. program may write a thesis based on a research project (Plan I) or, alternatively, may elect to submit a nonresearch project incorporating a review and analysis of one or more topics of current or historical interest in biology (Plan II).

Since scientific problems encountered today are multifaceted and require multidisciplinary approaches, students are expected to acquire a broad background in the physical and life sciences. Doctoral students must

complete formal course work in or have equivalent training related to six of the following seven areas: ecology, physiology, cell biology, developmental biology, genetics, microbiology, and molecular biology. Master's students must have competency in five of these life-science areas. Each student is also expected to satisfactorily complete a course or sequence in biometry and any advanced courses designated by the student's graduate study committee consistent with the chosen area of specialization.

Each student must also enroll in three seminar courses approved by his or her graduate study committee, and one of the seminars must be outside the student's primary area of specialization. Also, each student is required to demonstrate proficiency in teaching by delivering formal course lectures or by conducting instructional laboratories. Certificates for advanced training in teaching are also available.

Examinations

To qualify for candidacy, a student in the Plan I master's program must satisfactorily complete either a written or an oral comprehensive examination. A doctoral student must take both written and oral comprehensive examinations. As part of a student's final defense of his or her dissertation or thesis, a public departmental seminar must be presented.

Class A Teaching Certification

Under the Alabama Department of Education's "Strengthened Subject Matter Option," students who complete requirements for the master's degree in biology can also receive class A teaching certification, providing that certain prerequisites and requirements are met. Complete details are available from the School of Education Certification Office, EB 100, 1530 3rd Avenue South, Birmingham, Alabama 35294-1250 (Telephone 205-934-5423).

Additional Information & Mailing Address

Deadline for Entry Terms:	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	March 1 for summer and fall; October 15 for spring admission
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information contact Dr. Stephen A. Watts, Graduate Program Director, UAB Department of Biology, CH 375, 1720 2nd Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-9685

Fax 205.975.6097

E-mail sawatts@uab.edu

Web <http://www.uab.edu/uabbio>

Physical Address

UAB Department of Biology, Campbell Hall, Room 464, 1300 University Blvd., Birmingham, Alabama 35294-1170.

Chemistry

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D., M.S.
Director:	David E. Graves
Phone:	(205) 975-5381
Fax:	(205) 934-2543
E-mail:	dgraves@uab.edu
Web site:	www.uab.edu/cas/chemistry

Program Information

The UAB Department of Chemistry offers graduate programs leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees that are designed to ensure disciplinary quality and research competency. The Department of Chemistry has an outstanding research active faculty and highly collaborative culture that is conducive to stimulating graduate studies in a collegial atmosphere. The graduate program in the Department of Chemistry provides opportunities for research mentors to provide personalized attention to the academic and research progress of each of our graduate students.

Key features of the Department of Chemistry Graduate Program:

- Students are quickly integrated into research laboratories (ideally in first semester)
- Research is highly collaborative, both within the Department of Chemistry and the UAB biomedical research complex
- Interdisciplinary programs to broaden research interests including drug discovery, advanced materials, biophysical chemistry, structural biology, and nanomaterials
- Strong record of career success for graduates in academia, industry, and government

All graduate students are required to pursue a graduate curriculum that provides the general knowledge-based foundation through a series of six core curriculum courses (18 semester hours). All students are required to pass the Foundations Courses (CH 600/CH 700, Foundations I (Analytical and Physical); CH 601/CH 701, Foundations II (Organic and Inorganic). At least four additional chemistry core courses (12 semester hours) are selected by the student and the student's graduate committee. The graduate student and the graduate research mentor (in consultation with the student's graduate research committee) select additional graded graduate courses to complete a minimum of 24 semester hours. There is no semester hour requirement for additional course work but the student must complete a minimum of 24 semester hours of graduate coursework with an overall GPA of 3.0 or higher. Chemistry graduate students may also participate in and enroll in interdisciplinary graduate programs, requiring enrollment in courses in other departments throughout the UAB campus that will broaden the students background in selective areas and greatly strengthen their ability to carry out interdisciplinary research.

All graduate students are to demonstrate communication skill competency. Adequate performance is required on the departmental literature seminar, written responses to essay questions, dissertation defense, teaching, written publications, and professional presentations at scientific meetings. All chemistry graduate students are required to complete GRD 715 (Graduate Teaching Assistantship Training) during their first term in the program. Students with English as a second

language enroll for 3 semester hours. All others enroll in this course for 2 semester hours. This course is required but is not counted toward the 24 semester hour minimum.

During the Fall semester, first year graduate students are required to enroll in CH 790 (Introduction to Graduate Research). The student will be introduced to the graduate research faculty and their research interests. The student is required to meet with prospective research mentors to discuss interest in the prospective mentor's laboratory and if needed, schedule a 3-4 week rotations in research laboratories of interest. The process of selecting the graduate research mentor must be completed by the end of the student's first year.

Core Courses:

Requirements	Hours
CH 600/700 Foundations of Physical and Analytical Chemistry	3
CH 601/701 Foundations of Organic and Inorganic Chemistry	3
CH 629/729 Special Topics in Physical Chemistry	3
CH 631/731 Organic Reactions and Their Mechanisms	3
CH 632/732 Organic Reactions and Synthesis	3
CH 633/733 Reactive Intermediates and Conservation of Bonding	3
CH 639/739 Special Topics in Organic Chemistry	1-3
CH 642/742 Organometallic Chemistry and Catalysis	3
CH 649/749 Special Topics in Inorganic Chemistry	1-3
CH 659/759 Special Topics in Analytical Chemistry	3
CH 664/764 Biophysical Chemistry	3
CH 669/769 Special Topics in Biochemistry	3
CH 671/771 Medicinal Chemistry and Drug Discovery	3
CH 689/789 Special Topics in Polymer Chemistry	3
Total Hours	38-42

Substitutions are permitted with the approval of the student's research advisory committee and director of the graduate program. Master's students choose from the 600 courses, Ph.D. students from the 700 courses.

M.S. Program

Plan I

Plan I is a research program that requires a minimum of 24 semester hours (including 18 semester hours of core courses) of formal academic coursework approved by the student's graduate study committee. The progress of the student's research program is monitored by the graduate study committee. The student, having been admitted to candidacy and having completed an approved plan of research, will complete and defend a thesis.

Plan II

Plan II is a non-thesis program that requires a minimum of 30 semester hours (including 18 semester hours of core courses) of appropriate graduate work that has been approved by the student's graduate study committee and Department of Chemistry Graduate Program Director.

Ph.D. Program

For Ph.D. students, there are no specific course requirements beyond the core courses. The academic program is determined through the action of the student's graduate research mentor and graduate research committee. The student is required to successfully complete their departmental seminar by the end of their second year. A written

qualifying examination must be passed in the student's area of specialization. If failure occurs, only one repeat exam is allowed. An original research proposal must be successfully defended within 12 months of completion of the written qualifying examination. If failure occurs, one repeat defense is allowed. Once admitted to candidacy for the Ph.D. degree, the student must write and successfully defend a research dissertation.

Entry Term	Deadline
Deadline for Entry Term(s)	Each semester
Deadline for All Application Materials to be in the Graduate School Office	Six weeks before term begins
Number of Evaluation Forms Required	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	None

For detailed information, contact Ms. Laura J. Knighten, Graduate Recruitment Coordinator, 1720 2nd Avenue South, Birmingham, AL 35294-1240.

Telephone 205-934-8139 | E-mail knighten@uab.edu | Web www.uab.edu/cas/chemistry

Communication Studies

The Department of Communication Studies is concerned with human interaction and communication in all its forms. The Communication Studies Department provides research, teaching and service to enable students to develop understanding and skills in order to thrive in a global communication environment of unremitting change and increasing diversity. To this end the department offers an undergraduate major in Communication Studies, and graduate courses leading to a Master of Arts in Communication Management.

Communication Management

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

M.A. Program

The master's degree program in communication management is targeted at professionals in the fields of public relations, print and broadcast journalism, and other related areas. Students can explore practical and theoretical applications in professional communication fields. Classes are held primarily or exclusively at night and on the weekends to benefit working students. The program will award students a master's degree in communication management. Students in the program will need to complete 36 semester hours of graduate study. The range of courses is designed to allow students to customize their studies according to their career goals.

Additional Information

For additional information, contact Dr. Jonathan H. Amsbary, Program Director, HHB, Room 335, 1401 University Boulevard, Birmingham, AL 35294-1152.

Telephone 205-934-3877
E-mail: amsbary@uab.edu

Web <http://www.uab.edu/cas/communication/graduate-program>

Computer and Information Sciences

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D., M.S.
Director:	Dr. Purushotham Bangalore
Phone:	(205) 934-8604
E-Mail:	puri@uab.edu
Web site:	www.cis.uab.edu/graduate/

Program Information

The field of computer and information sciences deals with theory and methods for processing of information. Graduate programs leading to the M.S. and Ph.D. degrees are designed to prepare individuals for professional and research-level careers in industry, government, and academia. Prospective students should have substantial background in computer science and mathematics.

M.S. Program

The M.S. program requires 30 semester hours of coursework and a thesis (Plan I) or 36 semester hours of coursework (Plan II). Specializations are available in bioinformatics, computer graphics, and distributed computing.

Ph.D. Program

The Ph.D. program consists of three phases (with some overlap between phases). The first phase of the program is devoted primarily to formal coursework and preparation for the qualifying examination. The second phase consists of coursework and research in preparation for the comprehensive examination. This examination requires presentation of a dissertation research proposal. Successful completion of this phase leads to admission to candidacy. The final phase is the completion of the dissertation research and its defense. Ph.D. student progress will be reviewed annually.

Additional Information

Deadline for Entry Term(s):	February 1 for Fall; September 1 for Spring.
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Contact Information

For detailed information, after first visiting the website below for basic information including application guidelines and prerequisites, contact Dr. Purushotham Bangalore, Associate Professor and Graduate Program Director, UAB Department of Computer and Information Sciences, Campbell Hall, Room 130, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-8604
E-mail puri@uab.edu
Web <http://www.cis.uab.edu/graduate/>

English

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.A.
Director:	Dr. Gale Temple
Phone:	(205) 934-8593
Email:	gtemple@uab.edu
Web site:	www.uab.edu/english

Admission Requirements

For admission in good standing, applicants must meet the Graduate School's requirements for scholarship and test scores (GRE General Test or MAT). The applicant should normally have finished the requirements for an undergraduate degree in English, including satisfactory completion of at least six semester hours in a foreign language. A generally well-prepared applicant who is lacking in some part of the undergraduate preparation may be admitted with the provision that any deficiencies be removed by a time specified by the graduate program director.

Program Description

Students in the graduate program can concentrate their studies in any of three areas: Literature, Composition and Rhetoric, or Creative Writing. The requirements for each of these concentrations are explained below.

Concentration in Literature

Most literature courses can be considered to fall into one of the following areas, each of which has its own reading list.

Group I:

British Lit before 1500
 British Lit 1500-1660
 British Lit 1660-1790
 British Lit 1790-1900
 British Lit 1900-present

Group II:

American Lit before 1800
 American Lit 1800-1900
 American Lit 1900-present
 African American Lit 1746-present
 African Diaspora Lit

Group III:

Composition Pedagogy
 Rhetorical Theory
 Linguistics
 Critical Theory

Concentration in Literature

Plan I.

1. Students who write a thesis must take 3 hours in Bibliography & Methods, 3 hours of linguistics, 6 hours of thesis work, 12 hours of British/American literature, and 6 hours of electives. They must take at least 6 hours in Group I and 6 hours in Group II.

2. 15 hours of course work must be at the 600 seminar level in English. A maximum of 3 of these required 15 hours can be taken as EH 699 Thesis Research.
3. Students must choose a member of the English faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least two other faculty members to complete their GSC. All members of the GSC must be graduate faculty. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
4. Before students can be admitted to candidacy, they must have passed 18 hours of course work and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.
5. Students must pass a Thesis Defense.

Plan II.

1. Nonthesis students must take 3 hours in Bibliography & Methods, 3 hours of linguistics, 12 hours of British/American literature, and 12 hours of electives.
2. 15 hours of course work must be at the 600 seminar level in English.
3. Students must pass individual tests in 5 areas, but 1 of these tests may be replaced by earning a cumulative 3.5 or better G.P.A. in two English graduate courses in one of the listed areas OR by passing two creative writing courses at the 500 level or above.
4. All students must choose at least one test area from each Group.
5. By the time students have earned 24 credit hours toward the M.A., students must secure the agreement of a graduate faculty member to serve as chair of their Graduate Study Committee (GSC). Students are encouraged to secure this faculty mentor as early as possible since the chair of a student's GSC has primary responsibility for mentoring the student through the exam process. The Committee chair must coordinate the composition, administration, and evaluation of all area tests for that student. The chair is also responsible for informing the student (and graduate program director) of the criteria for evaluation of the subject area tests; for notifying the student of the results; and for meeting with the student afterwards to review the tests. The chair is also responsible for keeping the graduate program director informed of the student's progress and maintaining a complete exam file on the student.
6. In consultation with the student and the graduate program director, the Committee chair will appoint at least three other faculty to serve on the student's GSC. All members of the GSC must be graduate faculty. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
7. Each two-hour area test must follow a standard format that allows students to demonstrate their ability to read closely and to synthesize ideas.
 - a. Area tests in literature and critical theory will give the following instructions based on selections from the area reading list:

Choose one of the following passages and write an essay that:

- i Establishes—based on the chosen passage—some significant literary, intellectual, and/or cultural context and presents a thesis having to do with that context.
- ii Explains, by a close reading of the text, why the chosen passage is important both to the work from which it is taken and to the thesis of the present essay.

- iii Discusses the context and thesis in relation to at least two other works from the area reading list.
 - b. Area tests for Composition Pedagogy or Rhetorical Theory will give the following instructions based on selections from the area reading list:
Choose one of the following passages or set of passages and write an essay that:
 - i Indicates your understanding of the passage(s) and the work from which it is taken.
 - ii Identifies and explains the specific issues in rhetorical theory or composition pedagogy that are addressed by or related to the selection(s).
 - iii Discusses these issues in a broader context by drawing on at least two other works from the area reading list.
 - c. See the Director of the Linguistics Program for a sample area test in Linguistics.
- 8. Students must provide their GSC with a minimum of three weeks' notice in scheduling area tests, which must be taken Monday-Friday during the tenth week of each semester (sixth week during the shortened summer term).
- 9. Students are limited to three attempts at passing a test for the same area.
- 10. The GSC will hold a group grading session to evaluate individual tests as Failing, Passing, or High Pass (the latter designation must be a unanimous decision of the GSC). If a student earns four High Passes, this student will be passed "With Distinction."
- 11. There is no oral examination for nonthesis students.

Concentration in Composition/Rhetoric

Plan I.

1. Students who write a thesis must take 3 hours in Bibliography & Methods of Research, 3 hours of linguistics, 9 hours of literature electives, 6 hours of thesis research, 3 hours of rhetorical theory, and 6 additional hours of courses in the areas of Rhetorical Theory, Composition Pedagogy, or Professional Writing (total of 30 hours).
2. 15 hours of course work must be at the 600 seminar level in English. A maximum of 3 of these required 15 hours can be taken as EH 699 Thesis Research.
3. Students must choose a member of the Composition/Rhetoric faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least two other faculty members to complete their GSC. All members of the GSC must be graduate faculty and at least one (in addition to the chair) should be another composition/rhetoric specialist. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
4. Before students can be admitted to candidacy, they must have passed 18 hours of course work and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.
5. Students must pass a Thesis Defense.

Plan II.

1. Nonthesis students must take 3 hours in Bibliography & Methods of Research, 3 hours of linguistics, 9 hours of literature electives, 3 hours of rhetorical theory, and 12 additional hours of courses in the areas of Rhetorical Theory, Composition Pedagogy, or Professional Writing (total of 30 hours).

2. Guidelines 2-11 under Concentration in Literature, Plan II, apply to these students.

Concentration in Creative Writing (Plan I only)

1. Creative writing students are required to take 12 hours of creative writing workshop courses, 6 hours of thesis research, 9 hours of literature, and 3 hours of English electives.
2. 15 hours of course work must be at the 600 seminar level in English including at least one section of a 600-level creative writing workshop. A maximum of 3 of these required 15 hours can be taken as EH 699 Thesis Research.
3. Students must choose a member of the Creative Writing faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least two other faculty members to complete their GSC. All members of the GSC must be graduate faculty and at least one (in addition to the chair) should be another creative writing specialist. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
4. Before students can be admitted to candidacy, they must have passed 18 hours of course work, including at least 3 hours in creative writing, and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.
5. Students must pass a Thesis Defense.

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE or MAT (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Dr. Gale Temple, Graduate Program Director, Department of English HB 220, 1530 3rd Avenue South, Birmingham, AL 35294-1260.

Telephone 205-934-8593

E-mail EnglishGrad@uab.edu

Web <http://www.uab.edu/cas/english/graduate-studies>

History

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.A.
Director:	Dr. Andrew W. Keitt
Phone:	(205) 934-7083
Email:	akeitt@uab.edu
Web site:	www.uab.edu/history

Program Information

The history graduate program provides opportunities for students to learn the techniques of research and broaden their knowledge of historical literature. Students may choose Plan I, which includes writing a thesis based on original research using primary sources, or Plan II, which requires the completion of MA exams in three historical topics. All students are required to enroll in HY 601 Historiography and HY 602 Historical Research and Writing and must take at least 30 hours of their course work in graduate seminars. Each student must take a minimum of 9 hours of course work in U.S. history and 9 hours in non-U.S. history (e.g., European, Asian, Latin America, World).

Plan I (Thesis Plan)

Requirements		Hours
HY 601	Historiography	3
HY 602	Historical Research and Writing	3
U.S. History	3 seminars	9
Non-U.S. History	3 Seminars	9
Electives	2 courses	6
Thesis Research	2 courses or equivalent	6
Total Hours		36

No foreign language study credits can be counted toward the degree requirements. Where foreign language requirements are appropriate, it is recommended that students satisfy these requirements before commencing thesis research.

Plan II: (Nonthesis Plan)

Requirements		Hours
HY 601	Historiography	3
HY 602	Historical Research and Writing	3
U.S. History	3 seminars	9
Non-U.S. History	3 seminars	9
Electives	4 courses	12
Total Hours		36

Students interested in Teaching Certification for Public Schools should contact the School of Education.

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	Additional application for financial aid (fellowship or assistantship) is required by program

For detailed information, contact Dr. Andrew W. Keitt, History Graduate Program Director, Department of History, HHB 360, 1720 2nd Avenue South, Birmingham, Alabama 35294-1152.

Telephone 205-934-7083

E-mail akeitt@uab.edu

Government

Chair: Wendy Gunther-Canada, Ph.D.

The Department of Government offers a graduate program of study leading to the Master of Public Administration (MPA) degree.

UAB's nationally ranked Master of Public Administration (MPA) program is NASPAA (National Association of Schools of Public Affairs and Administration) accredited. Our MPA program prepares students for successful careers in public service where they can serve the greater good. We have graduates locally and across the country who have become successful leaders and managers in local, state, and federal government positions, and in nonprofit organizations.

Public Administration (M.P.A.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	MPA
Director:	Dr. Akhlaque Haque
Phone:	(205) 934-4653
E-mail:	mpa@uab.edu
Web site:	http://www.uab.edu/mpa

MPA Program Mission

In line with the mission of the University, the MPA program is committed to excellence in graduate education through teaching, research and service. The program focuses on building the next generation of responsible decision makers by enhancing their intellectual capacities through knowledge and skills provided within the NASPAA-based MPA curriculum. The Master of Public Administration Program prepares individuals for positions of leadership in the public and nonprofit sectors. It is a professional graduate degree for both pre-career students and in-service administrators. The program is designed to develop the insights and skills needed to plan and formulate policy, and to organize, manage, and implement programs and operations. The MPA program is accredited by the National Association of Schools of Public Affairs and Administration (**NASPAA**). Its Board of Advisors consists of internal and external stakeholders comprised of community members, alumni and students.

The MPA curriculum is designed to ensure that students achieve competency in five domains:

- To lead and manage in public governance.
- To participate in and contribute to the policy process.
- To analyze, synthesize, think critically, solve problems and make decisions.
- To articulate and apply a public service perspective.

- To communicate and interact productively with a diverse and changing workforce and citizenry.

Degree Requirements

Students in the MPA program must complete a total of **39 semester hours** or the equivalent, with an overall grade average of at least B. The curriculum features a 9 course core sequence, plus 4 specialization/ elective courses in either of two tracks; Nonprofit Management (NPM) or Public Management and Planning (PMP). Students without professional public service experience are required to do a three hour internship in addition to required coursework. Previous graduate work at UAB or another NASPAA accredited MPA program may be credited toward the degree if it is directly applicable. Students may select the thesis option or the non-thesis option.

Joint Degree and Certificate Programs

- For students who are interested in both public administration and the delivery of public health services, a coordinated **MPA/MPH dual degree** is offered.
- For students who are interested in both public administration and the law, a coordinated **MPA/J.D dual degree** is offered.
- For students interested in criminal justice and public administration a coordinated **MPA/MSJ dual degree** is offered.
- For non-traditional students interested in managing nonprofit organizations the program offers a **Graduate Certificate in Nonprofit Management**. Students seeking admission into the Nonprofit Certificate should apply through Graduate School by visiting <http://www.uab.edu/graduate/images/acrobat/forms/certificate-app.pdf>

Admission Requirements

Because of its multidisciplinary nature, persons from all undergraduate majors are considered for admission to the program. Applicants must take the Graduate Record Examination (GRE) and submit scores. The following are eligible for a GRE Waiver:

Students with a graduate degree from an accredited college or university.

Students with at least 5 years professional, full-time, progressively responsible mid-to-senior level management experience. The Statement of Interest and resume should provide clear evidence to for this waiver.

The LSAT may be substituted for the GRE only by JD/MPA applicants. Standardized GMAT score may be substituted at the discretion of the Program Director.

** IMPORTANT Applicants who are applying for a waiver or substitution of other test scores must contact the MPA Director for the official approval. The applicant should submit a formal request accompanied by a resume to the MPA Program Director via postal mail or email attachment.

Two letters of reference are also required. Application for admission should be made online through the UAB ApplyYourself **Official UAB Graduate School's admission site**. Admissions will be made fall and spring semester. Deadlines for submitting application for admission are listed on the UAB Graduate School website.

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Fall: July 1 Spring: November 1

Number of Evaluation Forms Required: Two

Entrance Tests: GRE (TOEFL and TWE also required for international applicants whose native language is not English.). GRE waived for senior professional. See guidelines above.

Financial Aid

The Department of Government has a limited number of graduate assistantships awarded on a competitive basis, which can be awarded during any semester as vacancies occur. The Department has two scholarships which are awarded on a competitive basis each spring. Other financial resources are available through the Office of Student Financial Aid.

Curriculum

A total of 39 hours are required to complete the MPA program. For pre-career students an additional 3 credit hours of internship (20 hours/week) is also required. A full time student, taking 3 courses per semester, plus one additional course over the summer, should be able to complete the program within two years. All courses are offered in the evenings to accommodate working professionals.

Core Courses: All students are required to take the following nine courses:

Requirements	Hours
MPA 600 Administrative Ethics	3
MPA 601 The Public Policymaking Process	3
MPA 602 Administrative Theory and Behavior	3
MPA 603 Public & Nonprofit Budgeting	3
MPA 604 Human Resources Management	3
MPA 605 Information Technology in the Public Sector	3
MPA 606 Foundations of PA Research	3
MPA 607 Quantitative Methods for PA *	3
MPA 697 Grad Res Paper or Portfolio Mt **	3

* Pre-requisite MPA 606

** Should be taken last term. Not required for students pursuing thesis option

*** Effective in 2012-13.

Specializations

Students should select a specialization based upon their career goals and interests. The specializations are **Nonprofit Management or Public Management & Planning**. Students must take three courses in their specialization. In addition to three specialization courses, students must take one elective course. Generalists must take (2) courses from each specialization.

Nonprofit Management Specialization Requirements (choose 3 courses)

Students interested in improving their organizational management, fundraising and grant management skills for nonprofits should select this specialization. This specialization prepares students for a wide range of careers within the nonprofit sector including middle and upper

management positions, fundraising and development, grant management and program management/evaluation.

Requirements		Hours
MPA 671	Special Topics in Public Management	3
MPA 672	Nonprofit Management	3
MPA 674	GIS for Managers	3
MPA 678	Strategic Planning	3
MPA 684	Grants Management	3

Public Management and Planning Specialization Requirements (choose 3 courses)

Students interested in public management or planning should select this specialization. This specialization prepares students for a wide variety of positions including federal, state and local government management, budget and financial management, planning, economic development, community development, program analysis and evaluation.

Requirements		Hours
MPA 662	State and Local Government Administration	3
MPA 667	Administrative Law	3
MPA 678	Strategic Planning	3
MPA 681	Local Government Planning	3
MPA 689	Program Evaluation	3
MPA 682	Economic Development	3

Elective Courses

In addition to the elective courses listed below, any course from the specialization list can be used as an elective.

Requirements		Hours
MPA 668	Intergovernmental Relations	3
MPA 664	Women in Public Administration	3
MPA 665	Crisis Management	3
MPA 666	City County Management	3

Generalist MPA Degree (2 courses from each specialization)

As an alternative to selecting one of the above specializations, students may pursue a generalist MPA degree. This degree should be chosen if the student desires a broadly based degree and some familiarity with subjects in each of the specializations. Students who desire a public administration education transferable to many different public or nonprofit settings may want to take this course of study. To complete this degree, students must take the core curriculum and at least two (2) required courses from each of the two specializations.

Graduation Research/Portfolio Management Paper and Thesis Options

During the last semester of study, students opting for the non-thesis (Plan II) must register for MPA 697, Graduation Research Paper or Portfolio Management (effective fall 2012), and successfully complete a graduation research paper. Such a paper will require the student to synthesize material learned over the course of the program.

Students taking the thesis option (Plan I) must take three hours of Independent Study under the guidance of the thesis chair and six thesis hours.

Internships and Placement

Students may apply for an internship placement at any time. A few paid opportunities do arise, although the majority of internships are non-paid. Typical placements are in city and county government, planning departments, public health agencies, social service agencies, state government agencies, and various nonprofit organizations. The Department has placed several students in the prestigious Presidential Management Internship Program, which provides an excellent opportunity for eventual employment in the federal government. Students are also encouraged to use the services of the UAB Student Development Office in the University Center for career planning and placement. The faculty in the program also assists students in job placement. Please [click here](#) to see what some of our graduates are doing now.

Joint Degree Programs

Coordinated MPA/MPH Program

The MPA/MPH is designed to train individuals for administrative positions in public health and related health organizations. The Master of Public Administration degree prepares students for careers as administrators in public and nonprofit agencies, and the Master of Public Health provides a background in public health principles and programs. Students must apply and be accepted into both programs, meeting each program's entry requirements. Students are required to complete a total of 60-64 semester hours for the coordinated degree. Core requirements of 21 hours from the MPA program and 39-43 hours from the MPH program are required. Full-time students should be able to complete all degree requirements within three years.

Coordinated MPA/JD Program

The MPA program at UAB and the Cumberland School of Law at Samford University offer a coordinated MPA/JD program. The offering of this dual degree reflects recognition of the complex interrelationship between the legal system, public policy analysis, and public management. It will be particularly applicable to those pursuing careers in government and/or public interest law. Students must apply and be admitted to the MPA and JD programs separately. The requirements for each degree must be met. Close communication with both programs is required. Depending on prior experience, a field placement may be required.

Coordinated MPA/MSJ Program

The MPA/MSJ is targeted toward individuals who wish to gain competencies in public management and the theory/practice of criminal justice. Students must apply and be accepted into both programs, meeting each program's entry requirements. Students are required to complete a total of 60 semester hours for the coordinated degree. Core requirements of 24 hours from the MPA program and 18 hours from the MSJ program; an additional 12 hours of electives, 3 hours of internship and a 3 hour capstone course are required. Full-time students should be able to complete all degree requirements within three years.

MPA Alumni Association

An active alumni association welcomes graduates of the program into membership. The association makes both advisory and financial contributions to the program and seeks to elevate the level of professionalism in public administration through a variety of projects and services.

Contact Information

For additional information refer to the web site of the UAB MPA program: www.uab.edu/mpa. Inquiries concerning program admission or other questions about the program should be directed to the MPA Program Program Coordinator.

MPA Coordinator
Graduate Studies in Public Administration
Department of Government
University of Alabama at Birmingham
HHB 415, 1530 3rd Avenue South
Birmingham, Alabama 35294-1152
Telephone (205) 975-3413 or (205) 934-2339
Email: mpa@uab.edu

Justice Sciences

The Department of Justice Sciences is home to multiple graduate programs, including programs of study leading to the Master of Science in Criminal Justice (p. 37) (M.S.C.J.), the Master of Science in Forensic Science (p. 38) (M.S.F.S.), the Master of Science in Computer Forensics and Security Management (p. 24), and "A" and "B" graduate certificates in Computer Forensics. The department also co-sponsors a joint MSCJ/MPA program with the Department of Government.

Criminal Justice

Degree Offered:	M.S.C.J.
Director:	J. Heith Copes, Ph.D.
Phone:	(205) 934-2069
E-mail:	jhcopes@uab.edu
Web site:	http://www.uab.edu/justice-sciences/

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Information

The criminal justice graduate program requires study in the overall discipline, with intensive focus on the areas of criminal justice policy, criminal justice administration, research methods and statistics, and criminological theory. Beyond a core set of required courses, the program features a **Thesis Track** (Plan I) designed for students interested in pursuing a doctorate in criminal justice or criminology, and a **Non-Thesis Track** (Plan II) designed for students interested in pursuing entry- or advanced-level positions in a criminal justice or related agency setting. Students selecting the Plan I option are **required** to complete a Thesis project under a faculty adviser, while students selecting the Plan II track are **required** to complete a Demonstration Project and are strongly encouraged to complete a field placement (Internship).

Each year, students are admitted to the M.S.C.J. program for the fall term. **The application deadline for receipt of all admission materials by the Graduate School is July 1 each year.** Students **may** be admitted to the M.S.C.J. program "in good standing" provided they meet all minimum admission criteria established by the Graduate School and the program, which include having taken an introductory-level statistics course and an introductory-level research methods course in which a grade of "B" or better was earned. Most students admitted to the program have earned a cumulative undergraduate grade point of

average (GPA) of 3.0 or higher on a 4.0 scale **and** earned a combined score on the verbal and quantitative sections of the Graduate Record Examination (GRE) of 300 or higher. Students who otherwise meet minimum admission criteria but who have **not** taken both the statistics and the research methods courses **may** be admitted to the M.S.C.J. program on a "contingency" basis. Students so admitted will **not** be allowed to register for graduate coursework until the contingencies are removed. Students meeting the minimum requirements for admission including taking the statistics and research methods courses but who lack a substantive background in criminal justice **may** be admitted to the M.S.C.J. program on a "contingency" basis, but will be required to take remedial coursework before they will be allowed to register for any graduate courses.

Degree Requirements

Plan I (Thesis)

Students selecting the Plan I option **must**:

1. Complete a minimum of 30 semester hours of credits (of which 18 hours are the required professional seminars JS 583, JS 600, JS 601, JS 604, JS 605, and JS 606);
2. Complete 9 semester hours of electives; and
3. Propose, and then complete and defend, a major research project under the direction of a thesis committee that is chaired by the student's major adviser (minimum 3 hours of JS 699 credit). Students who select the Plan I option must establish and maintain a minimum GPA of 3.0 in all coursework undertaken (required and elective) while in the program. Students failing to do so may be dismissed.

Plan II (Non-thesis)

Students selecting the Plan II option **must**:

1. Complete a minimum of 36 semester hours in coursework (of which 21 hours are the required professional seminars JS 583, JS 600, JS 601, JS 603, JS 604, JS 605, and JS 606);
2. Complete 12 semester hours of electives (of which 3 hours of Internship (JS693/JS696) credit is strongly recommended); and
3. Complete a "Demonstration Project" in their area of substantive interest (3 hours JS 697). The demonstration project provides evidence of the student's proficiency in the core areas of research methods, statistics, and criminal justice policy. This research paper is done under the guidance of the student's advisor. The student will prepare and submit this research paper to his/her advisor. Students who select the Plan II option must establish and maintain a minimum GPA of 3.0 in all coursework undertaken (required and elective). Students failing to do so may be dismissed from the program.

Financial Aid

Students who are admitted to the M.S.C.J. program "in good standing" are eligible to receive department-based financial aid in the form of research assistantships or scholarships that are awarded on a competitive basis. Students are typically notified of such awards in early June of each year for the following fall.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	July 1
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information contact Dr. Heith Copes, Department of Justice Sciences, University of Alabama at Birmingham, 1201 University Boulevard Office Building, Suite 210, Birmingham, Alabama 35294-4562. Telephone: 205-934-2069
E-mail jhcopes@uab.edu
Web <http://www.uab.edu/cas/justice-sciences/>

Forensic Science

Degree Offered	M.S.F.S.
Director	Jason Linville
Phone	(205) 934-2069
E-mail	jglinvil@uab.edu
Web site	http://www.uab.edu/cas/justice-sciences/justice-science-graduate-programs

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Information

The Master of Science in Forensic Science program is designed to prepare individuals for careers in various forensic science and conventional analytical laboratories, emphasizing the application of scientific methods and technologies to legal proceedings. With thoughtful planning, many students have found the program helpful in building a strong foundation to pursue doctoral studies.

The program support includes many UAB faculty members from other departments, personnel from the Alabama Department of Forensic Sciences' Birmingham laboratory, the Jefferson County Medical Examiner's Office, and local forensic science-related private institutions. In addition, the program maintains a close working relationship with the DNA profiling laboratories of the Alabama Department of Forensic Sciences and hosts the editorial offices of the *Forensic Science Review* (the only review journal in forensic science). Faculty research and practice focus especially on forensic aspects of drug chemistry and DNA-based identification.

Minimum admission requirements include a B.S. degree in Chemistry, Biology, or a related natural science. Coursework is designed for qualified students to begin in fall and complete the program in 21 months. Admission is granted for the fall term only.

According to the National Institute of Justice, students wishing to pursue a career in forensic science should be aware that positions in these fields

usually require extensive background checks similar to those required for law enforcement personnel, and are likely a condition of employment. (National Institute of Justice, 2004. *Education and Training in Forensic Science: A Guide for Forensic Science Laboratories, Educational Institutions, and Students*. NCJ Report 203099. Washington, DC: United States Department of Justice, pp. 7-10).

Graduates from the UAB Master of Science in Forensic Science program are very successful in gaining employment within a year of graduating. During the period 2010-2012, 26 students completed the program. Of these, 21 are working in a laboratory, are teaching, or continuing their education (e.g., pursuing a doctorate, professional degree, or second master's degree). Thirteen of the graduates are employed in forensic science laboratories, ranging from those operated by the Alabama Department of Forensic Sciences to a toxicology laboratory in New Mexico.

Additional Information

Deadline for Entry Term(s)	Fall
Deadline for All Application Materials to be in the Graduate School Office	January 31. Later applications will be considered before April 30th if vacancies are available
Number of Evaluation Forms Required	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Dr. Jason G. Linville, UAB Department of Justice Sciences, 1720 2nd Ave. S, University Boulevard Office Building (UBOB) Room 210, Birmingham, Alabama 35294-4562. Telephone: 205-934-2069
E-mail: jglinvil@uab.edu
Physical Address (for directions): 1201 University Blvd. Birmingham, AL 35294.

Mathematics

The Department of Mathematics offers graduate programs of study leading to the M.S. degree in Mathematics or the Ph.D. in Applied Mathematics.

The master's program aims to give students the background to use mathematics in a variety of ways. We train students in mathematical rigor. This provides training in the ability to analyze and solve problems in all walks of life. We also emphasize the development of communication skills of our students (in the classes they take as well as in the classes they teach). Therefore the M.S. program prepares students not only for a career in secondary or junior college level teaching but provides also a very good preparation for students who go into business, industry, or government. In the past our students have been very successful in obtaining employment. Of course, the M.S. program will also prepare students who wish to pursue a Ph.D. in Mathematics but whose undergraduate education did not provide them with a sufficient background in advanced mathematics to directly enter a Ph.D. program.

The PhD program in Applied Mathematics prepares students interested in an academic career in a college or university as well as students interested in a career in business, industry, or government.

Applied Mathematics

Mathematics, Applied (Ph.D.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.*
Director:	Dr. Ioulia Karpeshina
Phone:	(205) 934-2154
E-mail:	karpeshi@uab.edu
Web site:	http://www.uab.edu/cas/mathematics/

* The Applied Mathematics graduate program is offered jointly by the University of Alabama at Birmingham, the University of Alabama (Tuscaloosa), and the University of Alabama in Huntsville.

Program Information

Mathematics has always been divided into a pure and an applied branch. However, these have never been strictly separated. The Ph.D. program in applied mathematics stresses the interconnection between pure mathematics and its diverse applications.

Admission

Only students with a firm foundation in advanced calculus, algebra, and topology are considered for immediate admission to the Ph.D. program. A student lacking this background will be considered for admission to the M.S. program. Upon passing the qualifying examination, a student may transfer to the Ph.D. program. We expect at least a B average in a student's previous work and a score above 550 on each section of the Graduate Record Examination General Test.

Program of Study

Each student in the Ph.D. program has to take the following steps:

- Passing the Joint Program Exam (JPE), also called the Qualifying Exam. The Joint Program Examinations in Real Analysis and Linear Algebra are given during two periods each year (one in May and one in September). During each period a student may take one or both of the exams but subject to the following restrictions: (1) either exam may be attempted at most twice and (2) a student may participate in exams during no more than three periods.
- Completing 54 semester hours of graduate courses. The grade of each course has to be at least a B. The student's supervisory committee and the Joint Program Committee must approve the selection of courses. At least 18 hours must be in a major area of concentration, selected so that the student will be prepared to conduct research in an area of applied mathematics, while at least 12 hours have to be in a minor area of study, which is a subject outside mathematics.
- Passing a language or tool of research exam.
- Passing the Comprehensive Exam, which consists of a written part and an oral part.

- Preparing a dissertation, which must be a genuine contribution to mathematics.
- Passing the Final Examination (thesis defense).

Additional Information

For detailed information, contact Dr. Ioulia Karpechina, Mathematics Graduate Program Director, UAB Department of Mathematics, CH 483B, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone	205-934-2154
E-mail	karpeshi@uab.edu
Web	http://www.uab.edu/cas/mathematics/

Mathematics

Mathematics (M.S.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.
Director:	Dr. Ioulia Karpeshina
Phone:	(205) 934-2154
E-mail:	karpeshi@uab.edu
Web site:	http://www.uab.edu/cas/mathematics/

Program Information

Mathematics has always been divided into a pure and an applied branch. However, these have never been strictly separated. The M.S. program in mathematics stresses the interconnection between pure mathematics and its diverse applications.

Areas of Specialization

The student must choose a primary and a secondary specialization from a list of areas determined by the expertise of the faculty. As soon as the student is ready to choose specialization areas, he or she should contact the mathematics graduate program director, who will nominate a graduate study committee for the student. Courses offered to meet degree requirements must be approved by the mathematics graduate program director and the student's graduate study committee.

Degree Requirements

Plan I (Thesis)

The student must complete 30 semester hours approved by the mathematics graduate program director and the student's graduate study committee. The grade in each course has to be a B or better. A minimum of 24 hours must be on the 600 level or above. See Course Descriptions for which courses at the 500 level may not be counted toward the M.S. degree. In addition the following specific requirements must be met:

- At least 9 hours must be in the primary area of specialization,
- At least 6 hours must be in the secondary area of specialization,
- At least 9 hours must be outside the primary area,
- At most 6 hours of research may be included in the 30-hour requirement,

- A thesis must be completed, and
- An examination must be passed on material in the primary area of specialization (the exam may be written, oral, or both, at the discretion of the student's graduate study committee).

The student's performance in all respects must be approved by the graduate program director and the student's graduate study committee.

Plan II (Nonthesis)

The student must complete 30 semester hours approved by the mathematics graduate program director and the student's graduate study committee. The grade in each course has to be a B or better. A minimum of 24 hours must be on the 600 level or above. See Course Descriptions for which courses at the 500 level may not be counted toward the M.S. degree. In addition, the following specific requirements must be met:

- At least 12 hours must be in the primary area of specialization,
- At least 6 hours must be in the secondary area of specialization,
- At least 9 hours must be outside the primary area,
- No research may be included in the 30-hour requirement,

Two examinations must be passed on material in the two areas of specialization. (The exams may be written, oral, or both, at the discretion of the student's graduate study committee.)

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	None

For detailed information, contact Dr. Ioulia Karpechina, Mathematics Graduate Program Director, UAB Department of Mathematics, CH 483B, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-2154

E-mail karpeshi@uab.edu

Web <http://www.uab.edu/cas/mathematics/>

Physics

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D., M.S.
Director:	Dr. Mary Ellen Zvanut
Phone:	(205) 934-6661
E-mail:	mezvanut@uab.edu

Web site:

<http://www.uab.edu/cas/physics/graduate>

Program Information

Students in the M.S. and Ph.D. programs may specialize in any of the areas of interest to the faculty, including experimental physics and astrophysics, theoretical and computational physics, or biophysics and medical applications of physics.

Admission

Admission into the physics graduate program is by recommendation of the graduate admission committee of the Department of Physics. The committee takes into consideration GRE General Test scores, prior academic performance, personal statement, prior research experiences, and the letters of evaluation, usually from former instructors and research supervisors.

Beginning the Program

All students must take a placement examination on basic physics concepts before registering for any courses. Upon arrival at UAB, international students may be required to take English as a Second Language course or Scientific Communication courses at UAB during their first year of study.

M.S. Program

Plan I

The student must successfully complete at least 30 semester hours of coursework, including at least four core courses selected from PH 610 - PH 650 PH 651, and PH 671 - PH 672 and 6 semester hours of Thesis Research PH 699). The student must also write and complete a successful oral defense of a thesis under the direction of a graduate faculty member. Additional coursework should be selected with the advice of the student's graduate study committee to meet the particular needs of the student.

An interdisciplinary track for an M.S. degree Plan I is also offered. Students admitted to this track will typically hold a bachelor's degree in a science area other than physics, such as astronomy, biology, chemistry, geology, mathematics, or psychology, or an engineering degree, including optics and materials science. Thesis research will be in an interdisciplinary area, including astrophysics, astrobiology, biophysics, chemical physics, geophysics, mathematical physics, neurophysics, optics, materials science, or engineering physics. Students awarded an M.S. degree within this track will be prepared for an Assistant Research Physicist position, including qualification for co authorship, and would typically work under the direction of a doctoral-level person. The acquired skill would be highly marketable, as individuals trained in multidisciplinary areas for basic and applied research are increasingly in demand in industry, government laboratories, and other research institutions.

Acceptance into this interdisciplinary track will be through a Physics Graduate Faculty member, who will be prepared to supervise the student's thesis research and develop a plan of study. This plan of study will include a core of courses (Classical Mechanics, PH 561 - PH 562; Electromagnetic Theory, PH 545 - PH 546; and Quantum Mechanics, PH 550 - PH 551), other physics graduate-level courses, and a minimum of 12 hours of graduate-level courses offered by other departments. The Department of Physics will establish a standing Physics Interdisciplinary Track Committee to review and concur in each student's plan of study. As

is current practice, thesis oversight will be by the student's M.S. Graduate Study Committee.

Plan II

With approval of the physics graduate program director, a nonthesis option (Plan II) is available for all tracks in the Masters program. In this case, the graduate study committee requires an additional 6 semester hours of coursework instead of a thesis and gives the student an M.S.-degree exit examination.

Ph.D. Program

Students may choose from a Physics Track or Applied Physics Track. All students are required to pass a written qualifying examination covering the core areas of classical mechanics, electromagnetic theory, and quantum physics. In addition, an examination is given in one selected topic recommended by the graduate committee. The core exams must be taken at the first offering after completion of the appropriate course: PH 710, PH 750 - PH 751, and PH 771. Students may take the exam two times, but no more than this. If the second attempt is required, it must be done so at the first offering following completion of the first attempt. Under no circumstances may any part of the examination be taken more than twice.

Following satisfactory completion of the core qualifying examinations and consultation with individual faculty members, the student selects a specific area for dissertation research under the supervision of an appropriate graduate faculty member. The student's Graduate Study Committee, chaired by the major advisor, will outline a program of study including graduate courses and appropriate tools of research, such as computer and/or foreign language competency. Also, the Graduate Study Committee will administer an oral selected topic examination to test the student's knowledge in the area of research. The student must pass this oral examination in no more than two attempts. Then, with direction from the major advisor, the student should focus on formulating and writing a formal research proposal that must be presented and defended before the Graduate Study Committee; this should lead to a recommendation from the committee for admission to candidacy. Dissertation research culminates in the successful oral defense of the dissertation.

Physics Track: 90 total credit hours

- Twenty semester hours of existing core course work chosen from classical physics, quantum physics, statistical physics, and electromagnetic theory. Two semesters of scientific communications is required.
- Nine semester hours of elective courses in physics
- Directed and Dissertation Research (at least 2 semesters of dissertation research are required to graduate)

Applied Physics Track: 90 total credit hours

- Fourteen semester hours of existing core course work chosen from classical physics, quantum physics, statistical physics, and electromagnetic theory. Two semesters of scientific communications is required.
- Twelve semester hours of elective courses in applied physics
- Three semester hours of applied physics internship
- Directed and Dissertation Research (at least 2 semesters of dissertation research are required to graduate)

Core and elective courses are listed at <http://www.uab.edu/cas/physics/graduate/programs-of-study>

The following doctoral fellowships are available to the graduate students enrolled in the PhD program in physics at UAB.

Department of Education – Graduate Assistantship in the Areas of National Need (GAANN)

The U.S. Department of Education has funded the University of Alabama at Birmingham (UAB) Department of Physics for three years, 2012-15, to support the department's doctoral students in their academic pursuits. The funding released through the fiscal year 2014 Graduate Assistance in Areas of National Need (GAANN) program, will support four physics Ph.D. students at a stipend level up to \$30,000 depending on the financial need of the applicant as assessed by the UAB Office of Financial Aid. The GAANN program also makes an annual institutional payment of \$14,724 per student to cover educational expenses. The project title for the UAB physics program is "Doctoral Fellowships in Nanoscale Materials and Computational Physics at the University of Alabama at Birmingham". This distinctive program will lead to a Ph.D. degree in physics involving individualized academic course work, closely-supervised research experiences, optional industrial internships, continuous development of pedagogical and communication skills, and comprehensive supervision and evaluation of teaching performance.

Additional Information

Deadline for Entry Term(s):	Each Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments:	GRE General Test is required; in addition, subject test is recommended

For detailed information, contact Dr. Mary Ellen Zvanut, UAB Department of Physics, CH 384, 1720 2nd Avenue South, Birmingham, AL 35294-1170.

Telephone 205-934-4736

E-mail mezvanut@uab.edu

Web <http://www.uab.edu/cas/physics/graduate>

Psychology

Director of Behavioral Neuroscience: Amthor
 Director of Lifespan Developmental Psychology: Biasini
 Director of Medical/Clinical Psychology: Cook

Areas of Specialization

The Psychology Graduate Program offers three specialization options to doctoral students: Behavioral Neuroscience, Lifespan Developmental

Psychology, and Medical/Clinical Psychology. A terminal master's degree is not offered. The Medical/Clinical Psychology Specialization is accredited to offer training in clinical psychology by the American Psychological Association.

Behavioral Neuroscience

Study in the Behavioral Neuroscience specialization is designed to prepare students for independent research and teaching in the neurobiology of behavior. Research training is provided by faculty in the Department of Psychology and in the UAB Schools of Medicine and Optometry, who share an interest in the biological basis of behavior. The course of study includes a core curriculum in neuroscience and recognizes the interdisciplinary nature of this field. Students obtain strong backgrounds in behavioral science and in neuroscience and gain expertise in the content and techniques of selected areas of neuroscience as they apply to the study of behavior.

Faculty laboratories are equipped for research in behavior, neuroanatomy, neurochemistry, neuroimaging, neuropharmacology, neurophysiology, and molecular biology. The research interests of the faculty include neuroanatomy and neurophysiology of the visual system; interactions between the central nervous system and the periphery in the control of feeding and energy balance; neural underpinnings of obesity and plasticity in participants in a weight loss program; autism; emotional substrates of conditioned fear; neurophysiology and neuropharmacology of pain.

Lifespan Developmental Psychology

The Lifespan Developmental Psychology doctoral program trains scientists to conduct research to discover and apply basic principles of developmental psychology in an interdisciplinary context and to apply those principles to a variety of problems. Graduates are capable of taking positions in institutions of higher learning, medical schools, research institutions, government agencies, and other research and teaching positions. Research training is provided by the faculty of the Department of Psychology and may occur in collaboration with faculty at the Civitan International Research Center, the Center for Aging, the Center for Applied Gerontology, the Department of Pediatrics, The School of Public Health, and other centers and departments.

The research programs of faculty with interests in lifespan developmental psychology include a wide variety of topics from infancy to the elderly. Much of this research is funded by federal research grants. Research subareas include: developmental disabilities (with special interests in Autism Spectrum Disorders, prenatal development and exposure to toxic substances, early intervention, adolescent psychosocial development and mental health, and how family members adapt to the problems of a child with a disability); adolescence (with special interest in longitudinal studies, interactions between health and development, alcohol and drug use, predictors of depression and suicide, family and peer relations, those with special health care or education needs); and aging (with special interest in visual-perceptual problems of older adults with low vision, memory skills training with elderly populations, the psychological aspects of chronic illness in the elderly, chronically ill individuals, care giving in families of elderly persons, human factor issues in vision and aging).

Developmental Psychology students must complete a master's thesis. Admission to candidacy for the doctoral degree is based on satisfactory completion of coursework and completion of an area review in the form

of a Psychological Bulletin or Psychological Review article. The doctoral degree is awarded upon successful defense of the dissertation.

It is also possible to enroll in the Gerontology Certification Program concurrently with enrollment in the Lifespan Developmental Psychology Program. More information about this program may be found at: <http://www.aging.uab.edu/SubChannel/Training/pdf/gep-student-policy-2006.pdf>

Medical/Clinical Psychology

The Medical / Clinical Psychology Graduate Program trains students using the scientist-practitioner model to become leaders in health promotion, disease prevention, risk reduction, and symptom assessment and amelioration in multidisciplinary and medical settings. Research, course work and clinical training emphasize behavioral and psychological factors associated with medical illness and injury as well as neurobehavioral disorders across the lifespan.

The Program is co-sponsored by the UAB Department of Psychology (College of Arts and Sciences) and the School of Medicine. Program faculty are distributed across multiple academic departments and divisions, including but not limited to Psychiatry, Pediatrics, Neurology, Preventive Medicine, Clinical Immunology and Rheumatology, and Physical Medicine and Rehabilitation. Clinical psychologists and researchers in UAB-affiliated clinical and research centers, the Children's Behavioral Health System, the Birmingham VA Medical Center and throughout the community also play active roles in teaching as well as research and clinical supervision in this program.

A representative list of research programs in which faculty and students are currently involved includes: adolescent development (biological and psychosocial aspects, social and academic issues, and developmental psychopathology), aging (in relation to changes in cognitive abilities, mobility, physical and mental health, and financial competence), Alzheimer's disease (diagnosis, caregiver and financial competence issues), attention deficit hyperactivity disorder (subtyping and behavioral treatment), autism spectrum disorder (neural, cognitive and behavioral mechanisms; behavioral treatment), bulimia and binge eating disorders, cardiovascular reactivity, epilepsy (assessment and treatment), injury prevention, minority health issues (medical and health care access issues), neural plasticity, obesity (neurocognitive and addictive mechanisms; binge eating), chronic pain (neuropsychological and affective aspects; cognitive and pharmacological treatment), pediatric oncology (neuropsychological, psychological, behavioral, and caregiver aspects), rehabilitation (post-stroke, post-brain-injury, and with neurological disorders such as multiple sclerosis and cerebral palsy; use of technology to deliver and assess rehabilitation treatment), sleep and feeding problems of childhood, spirituality and coping with stress and illness, substance abuse (community-based treatment and evaluation related to nicotine, alcohol and cocaine addiction; cognitive aspects), and traumatic brain injury (assessment, treatment and caregiver issues). Most faculty research comes from the National Institutes of Health, private foundations, and the Centers for Disease Control and Prevention.

With the approval of both programs it is possible to complete the Master's in Public Health degree program concurrently with enrollment in the Medical/Clinical Psychology Doctoral Program.

Application

The deadline for receipt of a complete application for admission is: **November 30 for the Medical/Clinical Psychology Program;** **December 6 for the Lifespan Developmental Psychology Program;**

and January 15 for the Behavioral Neuroscience Psychology

Program. Applications are solicited both from students with bachelor's degrees and from those who may have already completed some graduate study. The GRE General Test is required. The GRE Subject Test in psychology is recommended.

Admission

Admission to the Psychology graduate program is highly selective, but in all cases applications are evaluated as a whole without minimum criteria on single scores or other indicators. Transcripts are evaluated for the content and difficulty of the courses taken as well as grades received. All programs follow an affirmative action/equal opportunity process to ensure that all applicants are evaluated fairly and on the basis of their individual merit. Further information regarding admission to the three Psychology specializations appears below:

Because of the interdisciplinary nature of the Behavioral Neuroscience specialization, students with diverse backgrounds in psychology, biology, and physical science are encouraged to apply. All students are expected to have undergraduate training in psychology, biology, physics, chemistry, and mathematics. Students not trained in one or more of these areas may be required to make up deficits after enrollment.

Admission to the Lifespan Developmental Psychology specialization requires a solid background in psychology as well as some courses in the life sciences. Research experience is essential. Excellent grades in statistics and mathematics are also valued.

The Medical/Clinical Psychology specialization requires a minimum of 24 semester hours in psychology, including statistics and research design; cognitive, biological, and affective bases of behavior; learning; abnormal psychology and personality. A strong background in mathematics and natural science (especially anatomy, biology and chemistry) is also recommended. Relevant research experience is considered an important indication of the applicant's motivation and commitment to program goals, and prior experience with clinical populations is also advantageous. The relevance of the applicant's goals and interests to ongoing activities of program faculty are weighed heavily in admissions decisions. Please visit the program website for further information on admissions (including characteristics of admitted students) and program outcomes.

Advisement

Behavioral Neuroscience students are advised by the Director of Behavioral Neuroscience in consultation with a graduate program steering committee and by their research preceptors until the dissertation committee is appointed, usually early in the third year of study.

Students accepted in the Lifespan Developmental Psychology specialization are matched with a faculty member who agrees to mentor that student. Therefore, applicants will need to identify faculty members with whom they share research interest and would like to study.

Students in the Medical/Clinical Psychology graduate program are advised by the Program Director during their first year. By the end of that year the student and director agree on a 3-member Graduate Study Committee, which serves as an advising committee as the student progresses through the program. Membership on the GSC can change to accommodate evolving interests, advising needs, research collaborations, etc.

Financial Aid

All students admitted to the Behavioral Neuroscience, Lifespan Developmental Psychology, and Medical/Clinical Psychology specializations may expect to receive financial aid for at least 5 years. Sources of support include fellowships, tuition scholarships, and research, clinical and teaching assistantships.

Additional Information

For detailed information, contact the Graduate Programs Office, UAB Department of Psychology, Campbell Hall Room 201, 1300 University Blvd., Birmingham, AL 35294-1170. The program office and all of the specialization directors can be reached by telephone at 205-934-8723. Contact information for the individual programs is shown below:

Dr. Franklin R. Amthor, Behavioral Neuroscience Specialization Interim Director
Telephone 205-934-2694
Email amthorfr@uab.edu.
Web: <http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience>

Dr. Fred J. Biasini, Lifespan Developmental Psychology Specialization Director
Telephone 205-934-2610
Email fbiasini@uab.edu.
Web: <http://crag.uab.edu/developmental/>

Dr. Edwin W. Cook III, Medical/Clinical Psychology Specialization Director
Telephone 205-934-8723
Email: ecook@uab.edu.
Web: <http://www.uab.edu/cas/psychology/graduate/medical-psychology>

Behavioral Neuroscience

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

The curriculum in Behavioral Neuroscience provides a student with advanced training that is broadly based in neuroscience. All students have a plan of coursework that includes Overview of Behavioral Neuroscience (PY 753), a two-semester statistics sequence (PY 716-PY 717), and an ongoing seminar in current research (PY 756). Advanced academic coursework is determined by the student and mentor. Each student must enroll in a research practicum directed by a member of the graduate faculty during each term in residence. The student initially rotates among faculty and laboratories during the first year to obtain breadth in points of view and experimental techniques. Student then chooses a mentor with whom they normally complete the remainder of their research training. Before admission to candidacy, each student must fulfill the pre-dissertation research requirement and pass the qualifying examination. Following acceptance of a proposal for dissertation research, the student is admitted to candidacy. The Ph.D. degree is awarded upon successful defense of the dissertation.

Developmental Psychology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Each student in the Lifespan Developmental Psychology specialization is encouraged to develop a systematic line of research that complements that of his or her advisor. With intense exposure to an important aspect

of developmental research, the student acquires skills that can be generalized to a variety of problems. Students are required to complete a core curriculum which includes 21 hours of developmental psychology classes, 15 hours of research design and statistics, 9 hours of general psychology and related discipline classes; 6 hours of teaching practicum and teaching; and at least 48 credit hours of research.

Lifespan Developmental Psychology students must complete a master's thesis. Admission to candidacy for the doctoral degree is based on satisfactory completion of coursework and completion of an area review in the form of a *Psychological Bulletin* or *Psychological Review* article. The doctoral degree is awarded upon successful defense of the dissertation.

Medical/Clinical Psychology

Prospective students should use this **checklist** to obtain specific admissions requirements on how to apply to Graduate School.

The Medical/Clinical Psychology specialization places strong emphasis on integration of biological and behavioral sciences. Thus, the research and clinical training that the program provides assumes an undergraduate background in both psychology and life science. The program engages students in continued pursuit of knowledge and skill fundamental to research and clinical practice. In addition, students focus their research and a clinical training in one or more of the several areas of clinical and health psychology that the program emphasizes, and pursue advanced scientific and applied coursework, clinical practica, and directed research activities that culminate in the doctoral dissertation.

Course requirements for the Medical/Clinical Psychology specialization include:

1. General Psychology and Neuroscience –a four-course sequence including cognitive, biological, social, emotional and developmental bases of behavior, as well as the history of the discipline
2. Statistics and Research Design--a four-course sequence
3. Foundations of Clinical and Health Psychology – including personality, psychopathology, health psychology and the ethics of professional practice
4. Psychological Assessment and intervention – five courses in cognitive and personality assessment, and empirically-supported interventions

Additional courses and/or seminars may be taken as electives and may be required depending on the student's area(s) of emphasis.

Students in Medical/Clinical Psychology are actively engaged in research throughout the time that they are enrolled in the program and typically complete a master's thesis project during their second or third year. Clinical practicum experiences begin in the summer of the first year, and in their final year students complete an APA-accredited clinical psychology internship in a medical facility. The doctoral degree is awarded upon successful defense of the dissertation and internship.

Sociology

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should use the following checklists:

Sociology (MA)
Medical Sociology (PhD)

Degree Offered:	M.A. in Sociology, Ph.D. in Medical Sociology
Director:	Dr. Patricia Drentea
Phone:	(205) 934-2562
E-mail:	pdrentea@uab.edu
Web site:	http://www.uab.edu/sociology/graduate-programs

Medical Sociology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Medical Sociology Ph.D. Program

This program is designed to provide students with the coursework and research experiences to become leading researchers and practitioners in medical sociology. Doctoral training in medical sociology exposes students to the central issues of the field through a variety of methodological techniques encompassing both qualitative and quantitative approaches. Graduate students study the social and cultural bases of health beliefs and behaviors, organizational structures of health care delivery, and patient-practitioner relationships, to name just a few examples. Students acquire expertise in theory formulation and data analysis.

There are abundant opportunities for graduate students to work with faculty on research projects in medical settings across the campus.

Admission

Admission to the Ph.D. program in medical sociology generally requires a minimum overall score of 1150 on the old GRE (verbal and quantitative), with a comparable percentage on the new version of the GRE; minimum GPA of 3.0 (A = 4.0), or a 3.2 GPA for the last 60 semester hours in a B.A. or B.S. program; and minimum GPA of 3.5 in all previous graduate coursework. Students should have completed at least 18 hours in social science courses, including social theory, statistics, and research methods. Students entering the program with a master's degree can receive up to 12 hours of transfer credit that were not used for any other degree program (see graduate school guidelines). They also have waived 6 credits of (thesis research credits). Because of the interdisciplinary nature of the Medical Sociology Ph.D. program, students with diverse backgrounds in social science and health-related fields are encouraged to apply. Students lacking adequate backgrounds in theory, research methods, or statistics may be required to make up deficits after enrollment.

Advising

The Graduate Director and/or the student's faculty mentor will provide continuous advisement on academic progress during the student's graduate study, including assistance with course selection and recommendations for research experiences that are consistent with the student's developing interests and abilities. In addition, each year the student will be formally evaluated by the Graduate Committee and will be provided with performance feedback.

Research supervision is provided by faculty whom students select to chair the master's thesis and doctoral dissertation committees. Typically, the student will select persons with whom a close, supportive relationship develops.

The placement of Ph.D. students in research sites within the Department and/or in areas across campus is an important part of the Medical Sociology Program. Such placements usually involve assisting faculty on research grants. Such experiences provide students with invaluable real-life exposure to medical sociology "in action." As such, they are important accompaniments to the coursework of the Ph.D. program. Teaching and research positions are offered to students based on department needs, funding available and student merit.

Curriculum

The components of the Ph.D. program are as follows:

1. Required Coursework

Medical Sociology Core (9 hr)

Required:

Requirements	Hours
SOC 780 Advanced Medical Sociology	3

2 of 5 Required Electives:

Requirements	Hours
SOC 734 Global Health	3
SOC 735 Special Topics in Global Health	3
SOC 755 Race and Ethnic Relations	3
SOC 756 Gender and Health	3
SOC 775 Place and Health	3
SOC 781 Sociology of Health and Illness	3
SOC 783 Health Care Delivery Systems	3
SOC 785 Family and Health	3
SOC 786 Health Disparities	3
SOC 787 Sociology of Mental Health	3
SOC 788 Social Medicine	3

Theory Core (6 hr)

Required:

Requirements	Hours
SOC 720 Classical Theory	3
SOC 722 Contemporary Sociological Theory	3

Statistics and Research Core (15 hr)

Requirements	Hours
SOC 601 Data Management and Analysis	3
SOC 704 Categorical Data Analysis	3
SOC 705 Advanced Research Methods	3
SOC 711 Qualitative Methods	3
Additional course approved by department	3

Research Hours

Master's Thesis Research Hours (6 hr)

Doctoral Dissertation Research Hours (24 hr)

Sociology/Health Electives/Transfer Credits (30 hr--up to 15 hours outside department)

Proseminars (3 hr)

Proseminar, SOC 702 - 1 hr Fall Research

Proseminar, SOC 702 - 1 hr Spring Professionalization

Proseminar, SOC 702 - 1 hr Summer Teaching

*students may take up to 3 790-793 classes for credit as electives.

*students may take 2 in-department online courses towards their degree

2. Graduate Proseminar Functions

The graduate proseminar series (SOC 702) is required of all entering doctoral graduate students for their initial three terms in the graduate program. These classes familiarize new students with departmental policies and procedures, as well as various facets of the profession of sociology. This series should not only help students become situated within the graduate program, but also give them an opportunity to become better acquainted with the faculty and graduate student body. Students should also gain experience with basic professional skills such as identifying appropriate journals, creating a curriculum vitae, identifying one's own research interests, developing basic classroom skills, and addressing ethical issues associated with the profession of sociology.

3. The Master's Thesis

Students pursuing the doctoral degree must follow Plan I (Thesis Plan) of the existing master's degree program by producing a research-based thesis, but two types of documents will be acceptable. The first is a traditional thesis organized in the form of an extensive book monograph. This option is especially appropriate for qualitatively based research.

The second acceptable type of document is a manuscript in the standard form of a journal article with appended materials. Specifically, this journal article thesis will consist of:

1. A forward which places the research in context, specifying the journal to which the article is to be submitted, delineating the rationale for co-authorship (if appropriate), and making acknowledgments;
2. A journal article manuscript with a text no longer than the page limitations of a journal selected by the committee, plus footnotes, references, tables, and figures;
3. An appendix with an annotated bibliography of relevant literature;
4. An appendix that details, in full, the methodological procedures;
5. An appendix of measurement instrumentation (e.g., survey instruments, in-depth interview schedules, observational logs, etc.);
6. An appendix of additional tables and/or samples of observational notes;
7. An appendix of other research documentation such as survey cover letters, human subject review approval forms, and letters of support and approval from facilities at which the research was conducted.

The master's thesis process involves:

1. Formation of the thesis committee;
2. Oral defense of a written thesis research proposal;
3. Oral defense of the completed thesis;
4. Submission of the completed manuscript to the Graduate School;
5. Submission of the journal article for publication.

The thesis committee consists of a minimum of three full-time faculty members, including one from outside the Department of Sociology. This committee will be responsible for guiding the research process, evaluating the final draft of the thesis, presiding over the oral defenses of the thesis proposal and the completed manuscript, and approving the journal article for submission for publication. In addition to meeting

general M.A. degree requirements, before being admitted to candidacy for the M.A. degree, a student in the Ph.D. program in Medical Sociology must have completed the master's level core courses in theory (SOC 707 and SOC 720) and the core methods courses (including SOC 601 or SOC 705 and SOC 711), completed two of the five courses in the medical sociology core, and made a successful oral defense of the thesis proposal.

For those students entering with a master's degree, the graduate director will review the student's transcript, evaluate course transfers (if any), and devise a course plan. This student's doctoral advisory committee also will handle the student's admission to candidacy and the requirement of submitting a journal article for review. The student with the master's degree will not be required to make oral defenses of his/her thesis work from another institution.

4. Comprehensive Exams

All doctoral students who enter the program in Fall 2010 or later must take a comprehensive examination no later than the end of the third summer after being admitted to the Ph.D. program.

The comprehensive examination should be taken in a specialty area chosen by the student. The specialty area must be a combination of health and one substantive area reflecting the specialties of the faculty (e.g., aging and health, health behaviors, community health, health and demography, health and family, health inequality, health policy, etc.). The advisory committee will consist of three faculty members selected by the Graduate Committee. Prior to taking the examination, the student should meet with the advisory committee to develop a reading list based on the specialty area.

The comprehensive examination will include five questions decided by the advisory committee reflecting major theoretical, methodological, and substantive issues in the student's chosen specialty area. The student will answer four of the five questions as a take-home exam, which will be distributed at 4:00 p.m. Friday and will be due the following Monday at 9:00 a.m. The members of the advisory committee will grade the examination on a pass/fail basis. Students who fail the examination but wish to continue in the program must take a make-up examination in the following Fall Semester. Students who fail the make-up examination will be terminated from the Ph.D. program.

5. The Doctoral Dissertation

The dissertation process is as follows:

1. Formation of the dissertation committee;
2. Oral defense of a written dissertation research proposal;
3. Oral defense of the completed dissertation;
4. Submission of the completed manuscript to the Graduate School.

In consultation with faculty, and near the completion of all substantive coursework, a student forms a dissertation committee consisting of at least five members, with two from outside the Department of Sociology. This committee will be responsible for guiding the research process, evaluating the final draft of the dissertation, and presiding over the oral defenses of the dissertation proposal and the completed manuscript. A student is admitted to candidacy after successful oral defense of the dissertation proposal and no earlier than the term in which the required substantive coursework is completed.

Financial Aid

All students admitted to the Ph.D. program will be considered for financial aid. Sources include graduate fellowships and assistantships.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	March 1
Number of Evaluation/recommendation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Ph.D. Program in Medical Sociology <http://www.uab.edu/sociology/>

For detailed information, contact UAB Department of Sociology, HHB 460A, 1401 University Boulevard, Birmingham, Alabama 35294-1152.

Telephone 205-934-2562

E-mail pdrentea@uab.edu

Web <http://www.uab.edu/sociology/>

Sociology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Sociology M.A. Program

The Department of Sociology offers two plans (Plan I and Plan II) for the M.A. Degree

Requirements for the M.A. Degree (Plan I)

Plan I students pursuing the M.A. degree in Sociology must have been admitted into the Medical Sociology Ph.D. program. To be admitted in good standing, candidates must meet all Graduate School admission requirements.

Plan I applicants lacking 18 semester hours in social science courses will be evaluated individually for academic deficiencies. Supplemental coursework may be recommended by the graduate faculty.

The program provides a Plan I (thesis) option. The M.A. degree is conferred upon the fulfillment of the requirements outlined below.

All of the following core courses are required for all students:

Requirements	Hours
SOC 601 Data Management and Analysis	3
SOC 702 Proseminar: The Profession of Sociology (The Proseminar is a one credit course that needs to be taken three semesters in a row, adding to a total of 3 credits.)	1
SOC 705 or SOC 711 Advanced Research Methods Qualitative Methods	3
SOC 720 Classical Theory	3
SOC 722 Contemporary Sociological Theory	3

2 or more substantive courses (these may be in areas outside of Sociology, subject to approval by the Sociology graduate program director)

Additional requirements for the Plan I M.A. degree include the following:

- 6 semester hours of thesis research
- An acceptable research-based thesis
- A final oral examination based on the thesis

Requirements for the M.A. Degree (Plan II)

Plan II is an Applied M.A. option which provides strong disciplinary training, along with internships and research experience, to prepare students for careers in business, non-profits, government agencies and the continued professional development of teaching careers. To be admitted in good standing, candidates must meet all Graduate School admission requirements.

The Plan II option is a non-thesis plan. A six-hour faculty-directed applied/community capstone project, undertaken at the conclusion of the program, provides an opportunity to synthesize all previous course material and meets the final requirement for the applied plan II MA degree in Sociology.

Students deciding to move into the Medical Sociology Ph.D Program will need to meet the core requirements from Plan I.

Students interested in learning more about the Plan II Applied Sociology MA should contact Dr. Jeffrey Clair, Director, Applied Sociology MA plan, 205-934-8680, or write jclair@uab.edu.

All of the following core courses are required for all students (18 hours):

Requirements	Hours
SOC 713 Intro to Applied Sociology Research Methods	3
SOC 723 Applied Sociological Theory	3
SOC 726 Applied Sociology	3
SOC 727 Applied Social Psychology	3
SOC 776 Capstone Project	6

Four additional classes are required for all students to fully matriculate. Choose FOUR classes from the following list, adding up to 12 hours:

Requirements	Hours
SOC 711 Qualitative Methods	3
SOC 715 Program Evaluation	3
SOC 728 Teaching Sociology	3
SOC 729 Consumer Culture	3
SOC 737 Practicum in Innovation, Creativity, and Applied Sociology	3
SOC 745 Sociological Practice	3
SOC 760 Sociology of Death and Dying	3
SOC 783 Health Care Delivery Systems	3
SOC 786 Health Disparities	3
SOC 789 Patient Care Relations/Ethics	3

Grad Biomedical Sciences (Joint Health Sciences)

For a full listing of GBS Faculty, visit <http://services.medicine.uab.edu/facultydirectory/facultymain.asp>

Interdisciplinary Themes*

Biochemistry & Structural Biology Theme

Cancer Biology Theme (p. 49)

Cell, Molecular, and Developmental Biology Theme (p. 50)

Genetics and Genomic Sciences Theme (p. 52)

Immunology Theme

Microbiology Theme

Neuroscience Theme

Pathobiology and Molecular Medicine Theme (p. 60)

* **Completion of the training requirements in one of the above interdisciplinary themes provides eligibility for conferral of one of the following PhD degrees:**

- Biochemistry and Molecular Genetics
- Cell Biology
- Cellular and Molecular Physiology
- Genetics
- Microbiology
- Neurobiology
- Pathology
- Pharmacology and Toxicology

For more information regarding GBS Interdisciplinary themes and departments, visit the GBS website at <http://www.uab.edu/gbs/home/>

Biochemistry & Structural Biology Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to the Graduate School.

Director:	Dr. David Schneider
Program Manager:	Kristin Boggs
E-mail:	bsb@uab.edu
Phone:	(205) 934-7810
Web site:	http://www.uab.edu/gbs/bsb

Theme Information

Objectives

Biochemistry & Structural Biology is looking for students who have a strong desire to understand life at the molecular level. Our goal is to teach the skills, implant the inspiration, encourage imagination, and

nurture the dedication essential for our graduates to become world-class researchers.

Our faculty and students are dedicated to excellence in both coursework and research programs, and we are honored that our team's accomplishments and discoveries have been chronicled in (*Nature*, *Structure*, other names here) and other noted journals and publications of record. New students join a select family of faculty and students who work and study together within the Biochemistry and Structural Biology Theme at UAB. We teach you how to think- what questions to ask and where to search for answers. We give you the skills and background necessary to launch a successful scientific career as an independent researcher.

Whether you choose to pursue advanced studies in molecular genetics, stem cell biology, or many of the diverse areas of research within the Biochemistry and Structural Biology theme, you will find the work interesting, challenging and rewarding. It piques the curiosity, sparks the imagination, enlists your resourcefulness and brings a sense of fulfillment that comes from exciting research and exhilarating discovery.

Admission Requirements

The BSB theme encourages applications from students interested in receiving a graduate degree in biomedical sciences. Applications are strongly encouraged from individuals with previous work experience, a master's degree in related area, or a professional degree such as the M.D., D.M.D., D.V.M. or O.D.

Applications will be reviewed by the Graduate Biomedical Sciences Admissions Committee. Acceptance will be based on undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview.

Acceptance into the BSB theme requires a bachelor's degree including undergraduate coursework in calculus, general and organic chemistry, and at least one introductory course in zoology or biology by the time of entrance.

The general requirements for acceptance into the program are –

- Minimum GPA of 3.0 on a 4.0 scale
- Combined verbal/quantitative score on the GRE of 300 (new test) or 1100 (old test)
- A strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in cell biology, biochemistry, developmental biology, and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended.

International students must submit scores from the Test of English as a Foreign Language (TOEFL) earned within the last two years. Applicants with scores of 600 (paper-based) or 80 (internet-based) or higher will be considered.

Biochemistry and Structural Biology (BSB) Curriculum

YEAR 1

Laboratory Rotations

- Three laboratory rotations - 10 weeks each
- Select dissertation advisor in the Spring following lab rotations.

Course Work

- August - October: GBS Core Course; 8:00 a.m. - 10:00 a.m. every weekday
- November - December: BSB Laboratory Methods Course; 8:00 a.m. - 10:00 a.m. every weekday

January - April: BSB courses - 1 month each:

- January - Molecular Enzymology
- February - RNA Biology
- March - Molecular Genetics
- April - Stem Cell Biology

YEAR 2

- Choose Thesis Committee - Mentor plus four faculty members
- Thesis Research
- Three Advanced Courses
- Journal Club
- Graduate Student Research Meeting (meets once a month)

YEARS 3 and 4

- Completion of advanced course work
- Thesis Research
- Journal Club
- Graduate Student Research Meeting (meets once a month)
- Qualifying Exam on thesis project - Written proposal and defense (3rd yr.)

YEARS 5+

- Dissertation research
- Dissertation Defense (public and private)

Biochemistry & Structural Theme Faculty

The faculty listing for the Biochemistry and Structural Biology theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=BSB>

Additional Information

Application Deadline	Refer to Theme website for deadline information: http://www.uab.edu/gbs/bsb
Letters of Recommendation	Three letters required
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For more information, contact:

Kristin Boggs

Program Manager, Biochemistry & Structural Biology Theme
1825 University Blvd; SHEL 120-E
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Fax: 205.996.6749

E-mail: kboggs@uab.edu

Cancer Biology Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Co-Directors:	Rosa Serra, Ph.D. Theresa Strong, Ph.D.
Phone:	(205) 934-7034
E-mail:	cancerbio@uab.edu
Web site:	www.uab.edu/cancerbio

Theme Information

The goal of the Cancer Biology Program is to train the next generation of cancer biologists so that they will make significant contributions to basic and clinical research. Students will receive training over a broad base—integrating molecular, cellular, biochemical and biological experimental approaches. Combinations of courses, seminars, small group discussions and hands-on research provide each student with a customized dissertation experience. Students will have opportunities to work with outstanding investigators throughout the UAB campus in the areas of tumor microenvironment, metastasis, cancer genetics, stem cells, gene therapy of cancer, pharmacology/toxicology, signaling and tumor immunology. Successful graduates will have a firm foundation upon which they can build careers in academia, research institutions, industry or government.

Students are expected to complete the entire program in four or five years. During the first year, students will participate in the GBS core curriculum and will begin more specialized training by exploring potential laboratories in which they may do their dissertation research as well as courses representing the multiple disciplines involved in cancer research. A course focusing on "classic papers" in cancer research will set the stage for modern approaches to studying the disease. Following three laboratory rotations, each student will select a mentor for his/her dissertation research. Following the core curriculum, students will begin specialized cancer research electives.

During the second year, students will complete their specialized courses and will participate in journal clubs and special topics curricula. After the second year, cancer biology students will write a proposal for their dissertation research and presented to their graduate advisory committee for approval. The focus following advancement to candidacy is hands-on research, although students can elect to participate in other advanced courses that will round out their education or provide opportunities to expand the research.

Admission Requirements

A baccalaureate degree in the natural or physical sciences is required. Undergraduate level courses in organic and analytical chemistry, cell biology, biochemistry and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended. See individual Program Admissions information for program-specific required or recommended courses.

The Graduate School recommends that entering students have a minimum grade point average (**GPA**) of 3.0 on a 4.0 scale and a minimum combined verbal/quantitative score on the Graduate Record Exam (**GRE**) of 1100. As the scoring system changes with the

implementation of the new GRE format, the Graduate School will make adjustments to reflect a minimum total score.

International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

Undergraduate or postgraduate **research experience** is essential. Students considered for the program must have a minimum of 6 months bench research experience.

Applications are reviewed by the Admissions Committee, representing all GBS thematic programs. **Acceptance** will be based on a combination of factors including:

- Undergraduate performance (both the curriculum and grade point average)
- Letters of recommendation
- GRE scores
- A personal statement of research and career interests
- Previous research experience
- Personal interview, at program expense (international applicants may be interviewed by phone or video conference)

Admission to our Programs is very competitive and the number of positions is limited; thus not every qualified applicant can be offered a position.

Financial Support

All students accepted into GBS programs receive a **competitive annual stipend and fully paid tuition and fees**. Single coverage **health insurance is also provided** at no cost to the student through VIVA Health UAB. **The annual stipend for the 2013-2014 academic year is \$26,000**. The total annual award value, including stipend, tuition, fees and health insurance is > \$37,500. Stipends are reviewed and updated regularly.

First-year students are funded through the Cancer Biology Graduate Program by Graduate School Fellowships and occasionally by other national and University fellowships. In subsequent years, students are supported through their advisor's research grants, institutional funds or training grants. In addition, highly qualified students are encouraged to apply for individual fellowship awards, with the guidance of their advisors. See Fellowships and Awards for additional fellowship information and resources.

Cancer Biology Theme Faculty

The faculty listing for the Cancer Biology theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=CB>

Additional Information

Deadline for Entry Term(s):	Consult Theme Website for information: http://www.uab.edu/cancerbio
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International Applications Deadline:	15 January 2013
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Entrance Tests (University Code: 1856)	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
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For detailed information, contact:

Patricia Matthews
Program Manager, UAB Cancer Biology Graduate Program
205.934.7034 (office)
pm1@uab.edu

Cell, Molecular, and Developmental Biology Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Director:	Dr. Bradley K. Yoder
Phone:	(205) 934-0994
E-mail:	byoder@uab.edu
Web site:	www.uab.edu/cmdb

Theme Information

Objectives

The Cell, Molecular, and Developmental Biology (CMDB) graduate theme is part of an umbrella graduate program in Biomedical Sciences that focuses on basic process in cell, molecular and developmental biology and how defects in these processes result in human diseases and birth defects. CMDB students will receive comprehensive training and instruction in cell, molecular, and developmental biology using modern tools and approaches as well as a wide range of model organisms and cell culture systems. The overall goal of the theme is to develop well-rounded scholars with expertise applicable to multiple fields pertinent to a productive research and teaching career in academic science centers, research institutions, and industry.

Admission Requirements

Students are admitted into UAB Graduate Biomedical Sciences (GBS) umbrella program and indicate a theme preference. Applicants to the UAB Graduate School are reviewed by the GBS Admissions Committee and will be evaluated on the basis of their undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview. Although students select a theme on admission into the GBS program, they may change theme affiliation at anytime; however changes that occur late in the doctoral program may require additional fundamental course work related to the specific theme.

Acceptance into CMDB requires a bachelor's degree including undergraduate coursework in calculus, general and organic chemistry, and at least one introductory course in zoology or biology by the time of entrance. The CMDB theme invites applications from individuals committed to obtaining a graduate education in biomedical sciences. Once accepted into GBS, students must complete the GBS core curriculum and three scientific research rotations in GBS laboratories. CMDB students will then begin course work in areas related to his/her

research interests and training needs determined through the advice of faculty mentors and staff.

Overview of the CMDB Theme

The CMDB theme is comprised of over 60 primary and secondary faculty members with appointments in many of the academic departments and Centers at UAB including Cell Biology, Genetics, Biochemistry, Neurobiology, Medicine, Oral and Maxillofacial Surgery, Nutrition Sciences, Cardiovascular Disease, Clinical Immunology, Rheumatology, Pathology, Environmental Health Sciences, Physiology and Biophysics, Psychiatry & Behavioral Neurobiology, Vision Sciences and Optometry. The scientific interests of the faculty are very diverse and interdisciplinary in nature. As such, the CMDB theme can provide students an individually tailored, comprehensive training program in cell, molecular, and developmental biology using modern tools and approaches in a wide range of model organisms. The research conducted by CMDB faculty addresses fundamental cellular and molecular questions that provide the basis for understanding and treating human disease.

In the first semester, all students accepted into the GBS program will complete a 14-week core course covering fundamentals in biochemistry, metabolism, genetics, molecular and cellular biology. After completion of the core GBS curriculum, CMDB students will complete a course entitled Cell Signaling.

In addition, starting early in the first semester each student will obtain research experience through three laboratory rotations that will be completed by the end of the first year. Laboratory rotations are for ten weeks and are an integral part of the first year curriculum. They are the first opportunity to truly experience what graduate level scientific research is all about. These rotations are highly structured and are meant for you to become acquainted with the laboratory and the mentor and to gain practical experience in a variety of the techniques and types of scientific questions being addressed within the different theme areas. At the end of each rotation the students will present their research in the form of a poster presentation that is open to the GBS community. After completion of the rotations, students choose a mentor and laboratory for their dissertation research.

In the second semester, CMDB students must attend Methods and Scientific Logic, a journal club designed to demonstrate how to critically evaluate data and experimental design in the scientific literature and research. In addition, beginning in the second semester CMDB students will complete a series of one month modules in areas related to cell, molecular and developmental biology that are in the general research and scientific interest of the individual student. The CMDB curriculum is tailored to the student's research and scientific interests. As such, the student will be able to select from modules in the CMDB theme as well as from other GBS themes approved by the student's mentor and the CMDB theme directors. The student must complete eight modules, five of which should be listed as a CMDB course. Additional course work may be required to fill gaps in the student's knowledge based on the recommendation of the mentor and the student's thesis committee.

All CMDB students must complete course in Biostatistics and Bioethics as well as conduct non-dissertation research in their selected laboratories. At the beginning of the second year, students will assemble a thesis committee in consultation with their mentors. This committee will be formed by anywhere between 4 and 6 members, 3 of which should be faculty associated with the CMDB theme.

In the second year, students continue non-dissertation laboratory research and take module course work to fulfill the requirements

described above. By the beginning of the third year, CMDB students must complete their qualifying examination consisting of a written dissertation research proposal in the format of an NIH style grant and an oral defense. The examination will evaluate whether the student has gained a sufficiently broad knowledge necessary for successful academic research. To help in this process, the second year curriculum will include a course in scientific writing and grantsmanship with a mock NIH grant review session. After successful completion of the exam the proposal will be submitted to a funding agency (if applicable) for possible support.

After the second semester, all students must participate in a CMDB approved Departmental Seminar Series and a weekly journal club until completion of the doctoral degree.

The curriculum of each Ph.D. candidate usually requires five years of training and is individually tailored to the interests and needs of the student by the advisor and a graduate committee chosen by the student. The Ph.D. degree is awarded upon successful defense of your dissertation, which includes an oral presentation of original, creative scientific investigations, and a written dissertation which is expected to include published manuscripts or manuscripts in preparation. Because pursuit of the Ph.D. degree is a full-time activity, all graduate students are supported by monetary stipends and do not have any required teaching duties. The level of activity required does not permit outside jobs or excessive extracurricular activities. Continuous registration and satisfactory academic standing during all terms is required.

Cell, Molecular, and Developmental Biology Theme Faculty

The faculty listing for the Cell, Molecular, and Developmental Biology theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=CMDB>

Additional Information

Deadline for Entry Term(s):	Refer to theme website for deadline information: http://www.uab.edu/cmdb
Deadline for All Application Materials to be in the Graduate School Office:	Consult theme website for deadline information: http://www.uab.edu/cmdb
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information see Web <http://www.uab.edu/gbs/cmdb/> or contact:

Dr. Bradley K. Yoder

Professor
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Nan Travis

Program Manager
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ntravis@uab.edu

Course Descriptions - Cell, Molecular and Developmental Biology

Cell Signaling - This course covers major extracellular and intracellular signal transduction cascades that regulate animal development and physiology. The class meets every day for 2 hours and consists of two exams.

Cellular Membranes and Organelles - This class will cover molecular and cellular processes that are involved in the assembly and maintenance of membranes and organelles and how defects in these processes contribute to human disease.

Cell and Molecular Aspects of Developmental Biology - The goal of this course is to provide an introduction to the fundamentals of vertebrate developmental biology. The course will consist of faculty lectures and research paper discussion groups covering a broad range of developmental issues from fertilization to organogenesis.

Developmental Neuroscience - The course will utilize the scientific literature and faculty lectures to cover a broad range of topics related to the mechanisms of building a brain. The topics covered range from neural induction in early development, to axonal guidance and synapse formation, to neuro-gial interactions in the adult nervous system. Grades will be based on two exams and student participation in class discussions.

Stem Cell Biology - This course will explore the derivation, manipulation, and differentiation of embryonic, fetal, and adult stem cells in both mice and humans. Topics to be discussed include stem cell self-renewal, teratoma formation, hematopoietic stem cells, neural stem cells, trans-differentiation, nuclear transfer, and reproductive and therapeutic cloning. The course will be a mixture of instructor lectures and interactive journal club style presentations from the current stem cell literature by the students. Students will be evaluated based upon their journal article presentations, participation in class discussions, quizzes, and attendance.

Development and Evolution – This course will cover the developmental mechanisms that drive evolutionary change and how body plans evolve through natural selection. The course consists of lectures and scientific literature discussions that will demonstrate developmental biology principles.

Skeletal Development and Disease - The primary goal of this course is to introduce graduate students to the basic and translational knowledge about development, maintenance and homeostasis of the mineralized tissues. Lectures in this course will focus on approaches and techniques that are utilized for understanding cellular and molecular mechanisms essential for the normal development, remodeling and patho-physiology of skeleton.

Cell and Matrix Interactions in Disease & Development - This course will cover a combination of basic mechanisms underlying extracellular matrix interactions with cells, and how these go wrong in several disease processes. It will be a series of seminars, followed in the final week with oral student presentations on the disease of their choice and submission of a one-page summary.

Mechanisms of Birth Defects - This class will provide an overview of the mechanisms of common birth defects. A review of the development of

each organ system is followed by a discussion of molecular mechanisms leading to alterations in normal development. Genetic and environmental mechanisms are discussed. A recent paper on each topic is presented as part of the class. Depending on the number of students enrolled, each student will be required to present one or two papers.

Grantsmanship and Scientific Writing – The objective of the course is to teach students how to effectively write grant proposals. This course will provide hands on training in the preparation of a grant application and demonstrate effective strategies for assembling a successful proposal. With guidance from the faculty, the students will write a NIH style proposal on their dissertation research topic. After the proposal is complete, each grant will be reviewed in a mock NIH study section. Based on the comments from the study section, the student will revise the application and submit the proposal to his/her thesis committee as part of the qualifying examination for admittance into candidacy.

Laboratory Rotations. Concurrent with the first year of course work, each student will perform laboratory research with mentors of his/her choosing in any of the GBS themes. Laboratory rotations are meant help students become acquainted with the laboratory and the mentor and to gain practical experience in a variety of the techniques and types of scientific questions being addressed within the different theme areas. Laboratory rotations last approximately ten weeks and each student will complete three rotations by the end of their first year. At the end of each rotation the students will present their research in the form of a poster. The performance in the laboratory and the poster presentation will be graded by the mentor of the laboratory and by two GBS faculty members respectively. A passing grade is required for all laboratory rotations. 1-6 hours.

Non-Dissertation Research. Laboratory research performed prior to admission to candidacy. 1-12 hours.

Dissertation Research. Prerequisite: Admission to candidacy. 1-12 hours.

CMDB Approved Seminar Series – All CMDB students must attend one of the weekly departmental based seminar series within the scientific interest of the student. The seminar series feature prominent speakers from both inside and outside of UAB and attendance is mandatory. Current approved seminar series include: Cell Biology, Neuroscience, Genetics, and Biochemistry. Additional seminar series may be included upon approval of CMDB and the mentor.

CMDB Journal Clubs - In the beginning of the second year until completion of the thesis defense, all CMDB students must participate in a journal club related to the student's research interests and to the CMDB theme. The purpose of the journal club is to give students valuable experience in critical assessment of the scientific literature and to keep up-to-date on the research activities emerging from CMDB related research. Current journal clubs associated with the CMDB theme are: Autophagy and Cell Death, Cell Biology, Cell-Matrix Interactions, Cancer and Developmental Biology, and Stem Cell Biology. Additional journal clubs may be included upon approval of CMDB and the mentor.

Genetics and Genomic Sciences Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Director:	Daniel C. Bullard, Ph.D.
Phone:	(205) 934-7768
E-mail:	dcbullard@uab.edu
Web site:	www.uab.edu/ggs

Theme Information

Objectives

The main goal of the **Genetics and Genomic Sciences Graduate Program (GGS)** is to provide students with an outstanding, flexible, didactic training experience to prepare them for independent and innovative careers in research. The Program emphasizes a broad approach to the fundamental principles of genetics and genomics, and offers a large pool of mentors with expertise in a wide variety of areas. The GGS offers close day-to-day interactions between students and faculty, both in the classroom and the laboratory.

The research interests of our program faculty span the fields of genetics, genomics, cancer, biochemistry, cell biology, and developmental biology. Modern molecular approaches are used to study gene structure, expression, and function in diverse experimental systems including humans, mice, *Drosophila*, *C. elegans*, and other organisms such as bacteria. The GGS is also designed to permit close collaborations during the Ph.D. training period between graduate students, postdoctoral fellows, and faculty, while also encouraging full participation in the larger community of biological scientists at UAB.

Admission Requirements

Students are admitted into UAB Graduate Biomedical Sciences (GBS) umbrella program and indicate a theme preference. Applicants to the UAB Graduate School are reviewed by the GBS Admissions Committee and will be evaluated on the basis of their undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview. Although students select a theme on admission into the GBS program, they may change theme affiliation at anytime; however changes that occur late in the doctoral program may require additional fundamental course work related to the specific theme. Acceptance into GGS requires a bachelor's degree including undergraduate coursework in calculus, general chemistry, organic chemistry, and at least one introductory course in zoology or biology by the time of entrance. Doctoral students will receive financial aid in the form of a stipend/fellowship plus full payment of tuition, fees, and their insurance premium. Current stipend/fellowships are \$26,000 per year for 20011-2012 entering students.

The GGS theme invites applications from individuals committed to obtaining a graduate education in fields related to genetics or genomics. We recommend that applicants take prior courses covering basic concepts in genetics and biochemistry if possible; however, this is not required for admission. Applications are strongly encouraged from individuals with previous research experience, a master's degree in related area, or a professional degree such as the M.D. or D.V.M. Once accepted into GBS, students must complete the GBS core curriculum and three scientific research rotations in GBS laboratories. GGS students will then begin course work in areas related to his/her research interests and training needs determined through the advice of faculty mentors and staff.

Overview of the GGS Program

The GGS theme is comprised of over 80 primary and secondary faculty members with appointments in many of the academic departments and Centers at UAB including Genetics, Cell Biology, Microbiology, Biochemistry, Neurobiology, Medicine, Pathology, Epidemiology, Biostatistics, Nutrition Sciences, Vision Sciences, and others. The scientific interests of the faculty are very diverse and interdisciplinary in nature. As such, the GGS theme can provide students an individually tailored, comprehensive training program in genetics and genomics through use of modern tools and approaches in a wide range of model organisms. The research conducted by GGS faculty addresses fundamental cellular and molecular questions that provide the basis for understanding and treating human disease.

In the first semester, all students accepted into the GBS program will complete a 14-week core course covering fundamentals in biochemistry, metabolism, genetics, molecular and cellular biology. After completion of the core GBS curriculum, GGS students will then take the Principles of Genetics course that will cover Mendelian and nonmendelian inheritance mechanisms, cytogenetics and chromosome disorders, and basic epigenetic concepts. Students are also expected to attend a weekly journal club and seminar series, such as those offered by the Department of Genetics, during all years of their graduate training. These weekly events generally start in September and run through May of each academic year.

In addition, starting early in the first semester each student will obtain research experience through three laboratory rotations that will be completed by the end of the first year. Laboratory rotations are for ten weeks and are an integral part of the first year curriculum. They are highly structured and allow the student to become acquainted with the laboratory and the mentor, gain practical experience in a variety of the techniques, and to learn about the different scientific questions being investigated within the GGS theme. At the end of each rotation, the students will present their research in the form of a poster presentation that is open to the GBS community. After completion of all three rotations, students choose a mentor and laboratory for their dissertation research.

In the second semester, GGS students will complete a series of one month modules that cover a wide variety of subjects including genome structure and function, linkage and association analyses, bioinformatics, and model systems for genetic analyses. In the summer of the first year, all GGS students must complete course in Biostatistics and Bioethics and conduct non-dissertation research in their selected laboratories.

During the subsequent years of the program, GGS students will focus on their laboratory research, as well as take a small number of specialized courses related to genetics and genomic sciences, or their specific areas of investigation. At the end of the second year of graduate training, students will assemble a thesis committee in consultation with their mentors. This committee will contain 4-6 faculty members, 3 of which should be faculty associated with the GGS theme. By the midpoint of the third year, GGS students must complete their qualifying examination consisting of a written dissertation research proposal in the format of an NIH style grant and an oral defense. The examination will evaluate whether the student has gained a sufficiently broad knowledge necessary for successful academic research. To help in this process, the third year fall curriculum will include a course in scientific writing and grantsmanship with a mock NIH grant review session. After successful completion of the exam the proposal will be submitted to a funding agency (if applicable) for possible support. After passing the qualifying exam and the necessary

advanced coursework, GGS students are accepted to candidacy for the Ph.D. degree.

The curriculum of each Ph.D. candidate usually requires five years of training and is individually tailored to the interests and needs of the student by the advisor and a graduate committee chosen by the student. The Ph.D. degree is awarded upon successful defense of your dissertation, which includes an oral presentation of original, creative scientific investigations, and a written dissertation which is expected to include published manuscripts or manuscripts in preparation. The pursuit of the Ph.D. degree is a full-time activity, therefore all graduate students are supported by monetary stipends and do not have any required teaching duties. The level of activity required does not permit outside jobs or excessive extracurricular activities. Continuous registration and satisfactory academic standing during all terms is required.

Genetics and Genomic Sciences Theme Faculty

The faculty listing for the Genetics and Genomic Sciences theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=GGS>

Additional Information

Deadline for Entry Term(s):	Please refer to the theme website for deadline information: http://www.uab.edu/ggs
Deadline for All Application Materials to be in the Graduate School Office:	Please refer to theme website to verify deadline dates.
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE or MCAT

For detailed information, contact:

Nan Travis

GGs Graduate Program Manager
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1825 University Boulevard
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Or

Daniel C. Bullard, Ph.D.
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KAUL 602B
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Course Descriptions for Genetics and Genomic Sciences

Required Courses

GBS 720: Genome Structure & Function. This course will cover a wide variety of topics related to this topic, including genetic variation and polymorphisms, alternative splicing, microRNAs, and novel sequencing and microarray technologies.

GBS 722: Bioinformatics. This course will cover a wide variety of different bioinformatics applications, which will be taught through use of available on-line bioinformatics resources. The topics covered will include: introductions to large-scale, generic databases at NCBI, European Bioinformatics Institute, SwissProt, PDB, UniProt and Ensembl; Sequence analysis systems such as BLAST, ORFfinder and GENSCAN, Multiple Sequence Analysis, gene identification in DNA and an introduction to the Human Genome Project; resources that are used in Microarray Data Analysis; Protein sequence analysis using Pfam, Prosite, Prints, Blocks, Protein structure analysis using SCOP, CATH; structural bioinformatics, secondary structure calculation, homology modeling, structure prediction, protein folding, protein-ligand docking and molecular dynamics.

GBS 723 : Model Systems for Genetic Analysis. The course will provide students with an in-depth knowledge of the different animal models used for analyses of gene function and genetic pathways. Topics include transgenic and knockout mouse technologies and strategies, large scale genetic screens in *C. elegans* and *Drosophila*, and modeling human genetic diseases in zebrafish.

GBS 724: Principles of Human Genetics. This course will address the basic principles of epigenetics and its involvement in many different biological/pathological processes. Epigenetic regulation refers to mechanisms that regulate gene expression without altering DNA sequences. Elucidation of epigenetic regulatory mechanisms has received great attention in the post genomic era. Topics include imprinting, X-inactivation, epigenetic mechanisms of gene regulation, and cancer epigenetics.

GBS 725 : Grant Proposal Writing. The objective of the course is to teach students how to effectively write grant proposals. This course will provide hands on training in the preparation of a grant application and demonstrate effective strategies for assembling a successful proposal. With guidance from the faculty, the students will write a NIH style proposal on their dissertation research topic. After the proposal is complete, each grant will be reviewed in a mock NIH study section. Based on the comments from the study section, the student will revise the application and submit the proposal to his/her thesis committee as part of the qualifying examination for admittance into candidacy.

Elective Courses (Can be taken for advanced course credit)

GBS 726 : Advanced Medical Genetics. This course will focus on the medical application of advances in genetics and genomics. Topics include chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics, inborn errors of metabolism, current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics, and genomic approaches to diagnosis and risk stratification.

GBS 727: Advanced Human Genomics. This course will cover the conceptual basis, major discoveries, and unsolved problems in human genomics, with an emphasis on disease applications. The goal is to make students conversant with the structures, functions, and natural histories of human genomes, the computational and experimental methods used to establish that knowledge, the applications of genomics to medical research, and the broader impacts of genomic research on the community. Each topic will be covered by an approximately 90-minute lecture from a subject-specific PI coupled to reading of pieces of primary literature. Students will also participate in 3 student-led journal clubs in which one or more papers are discussed in detail with the help of the teaching faculty. We will also perform 3 interactive sessions to teach basic computational skills in Unix, Perl and R. Grading will be determined by: discussion interaction, computational problem sets due in weeks 4, 6, and 8, and a ζ final ζ project in which students perform a small but cohesive set of bioinformatic analyses to address a question of their choosing, subject to approval/discussion with the teaching faculty. Format: Each of the 7 weeks will include two, 90 minute lectures performed at UAB. In weeks 2, 4, and 6, we will convene at HudsonAlpha for four-hour sessions. Each four-hour session will include ~1 hour of paper discussion, ~1 hour of teaching on a relevant computational topic, and ~2 hours of hands-on interactive data manipulation with commonly used data types and computational tools. Course meets both on UAB Campus and at Hudson-Alpha in Huntsville.

GBS 746: Epigenetics. Epigenetic regulation refers to mechanisms that control gene expression without altering DNA sequences. Elucidation of epigenetic regulatory mechanisms has received great attention in the post-tenomic era. This course will address the basic principles of epigenetics and its involvement in many different biological/pathological processes.

Systems Biology. Lectures will consider systems biology approaches in the context of the human genome project, and with an emphasis on simple model systems. Technologies, biological concepts, and the underlying motivation for this emerging area will be discussed using examples available in the literature. The central focus of systems biology is to acquire a more global and quantitative understanding of how living organisms function as complex genetic systems, and how this might provide a more complete understanding of phenotypic traits.

Other GGS Educational Activities

Department of Genetics Seminar. The Department of Genetics Seminar series meets once a week from September through May of each academic year. This is a forum in which invited speakers from other institutions, as well as UAB faculty members, postdoctoral fellows, and advanced graduate students present and discuss their research.

Genetics and Genomics Journal Club. Faculty, students, and postdoctoral fellows meet once a week and present papers on a wide variety of topics related to genetics and genomics.

Immunology Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Director:	Dr. Peter Burrows
Phone:	(205) 934-6529
E-mail:	peterb@uab.edu
Web site:	www.uab.edu/gbs/immunology/

Theme Information

Objectives

The Immunology Graduate Theme is a part of the UAB Graduate Biomedical Sciences Program. We are an interdisciplinary program emphasizing the study of multiple aspects of the immune system, from basic molecular mechanisms to whole animal studies and human translational research. The remarkable breadth of our program can be seen in the primary departments of the almost fifty theme faculty members. Faculty from the Departments of Microbiology, Cell Biology, Biochemistry and Molecular Genetics, Genetics, Biology, Pathology, Medicine, Pediatrics, Environmental Health Sciences, Epidemiology, Surgery, Ophthalmology, Dermatology, and Dentistry are involved in internationally recognized research and in the training of PhD-level graduate students and postdoctoral fellows. Currently, forty-five students are in training in the laboratories of our immunology faculty. Primary areas of research include: Allergy, Autoimmunity, Cancer Immunology, Clinical/Translational, Developmental Immunology, Host Defense, Immunodeficiency, Immunogenetics, Inflammation, Mucosal Immunology, Neuroimmunology, Structural Immunology, and Transplantation Immunology. Students obtaining a PhD in the Immunology Graduate Theme will be well-versed in modern immunology and have the option to pursue diverse career pathways.

Admission Requirements

Acceptance is based on undergraduate record (curriculum and grade point average [GPA]), Graduate Record Exam (GRE) scores, letters of recommendation, a personal statement of research and career interests, and past research activities. Domestic candidates who pass the first round of selection will be invited to visit UAB and meet the Immunology faculty and students.

The general requirements for acceptance into the Theme are:

- Minimum GPA of 3.0 on a 4.0 scale
- Combined verbal/quantitative GRE score #1100. New GRE scores should be at least 50% or better on each verbal/quantitative.
- A strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in immunology, cell biology, biochemistry, physics, genetics, organic and analytical chemistry are strongly encouraged. Undergraduate mathematics through calculus is also recommended. International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based), 250 (computer-based), or 100 (internet-based) or higher will be considered.

All students in the program receive a stipend (currently \$26,000), tuition and fees, and single coverage health insurance. Support is provided by the Theme, by the student's mentor, or through one of many fellowship programs.

Overview of the Theme

The Theme emphasizes interdisciplinary training in all areas of modern immunology. The first year of the program involves fundamental coursework and three research-based rotations in laboratories of the student's choosing. A qualifying examination and admission to candidacy take place in the second to third year. Advanced coursework, journals clubs, and dissertation research occur in the second and subsequent years. It is expected that completion of the PhD will require five to six years. To broaden their training experience, students are introduced to research at the national and international levels through seminars

presented by outside speakers and by attendance at national and international scientific meetings. Students take an active role in inviting and hosting speakers at UAB, and they are strongly encouraged to present their own results at outside meetings.

Immunology Theme Faculty

The faculty listing for the Immunology theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=IM>

Additional Information

Deadline for Entry Term(s):	Consult Theme Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Please refer to theme website to verify deadline dates: http://www.uab.edu/gbs/immunology
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information, contact Dr. Peter Burrows, Theme Director, UAB Immunology Graduate

Theme, SHEL 406, 1825 University Blvd., Birmingham, Alabama 35294-2182.

Telephone (205)934-6529

Fax (205) 996-6749

E-mail peterb@uab.edu

Course Descriptions

Core Curriculum

BLOCK 1 - BIOCHEMISTRY/METABOLISM

- Amino acids and primary protein structure
- Protein secondary and tertiary structure
- Posttranslational modifications and allosteric changes
- Glycobiology
- Lipid structure and metabolism
- Thermodynamic principles of biochemical reactions
- Enzyme kinetics
- Enzyme mechanisms and regulation
- Amino acid/nitrogen metabolism
- Glycolysis, gluconeogenesis and citric acid cycle
- Glycogenesis, glycogenolysis and pentose phosphate pathway
- Electron transport/oxidative phosphorylation

BLOCK 2- GENETICS/MOLECULAR BIOLOGY

- DNA recombination
- Nucleic acids & DNA replication
- Prokaryotic transcription
- Prokaryotic translation
- Prokaryotic gene regulation
- Eukaryotic genome organization
- Eukaryotic DNA replication

- Eukaryotic transcription
- Eukaryotic translation
- Eukaryotic gene regulation I
- Eukaryotic gene regulation II
- Mendelian inheritance
- Genetic variation and polymorphisms

BLOCK 3- BIOLOGICAL ORGANIZATION

- Integrated systems: From organelles to organs
- Membrane structure/function
- Cytoskeleton
- Secretion
- Endocytosis, lysosomal targeting, protein degradation
- Biochemistry of signal transduction
- Cell cycle
- Cell-cell junctions and polarity
- ECM and ECM-cell interactions
- Cell motility
- Apoptosis
- Discipline of pharmacology
- Pharmacokinetics

Theme Specific Courses

Introductory Immunology. Introductory Immunology is a team-taught survey course that covers basic concepts of innate and adaptive immunity. These integrated series of lectures provide a firm foundation in immunology, especially for those with minimal immunology background, and serve as an important refresher for the developing immunologist. Students actively participate in the course through weekly presentations of selected immunology topics based on the current literature.

Lymphocyte Biology. The objective of this class is to provide first year immunology students with the opportunity to gain a more in-depth understanding of selected aspects of lymphocyte biology. Possible topics include T cell subsets, B cell biology, lymphocyte activation, and transplantation immunology. The course is literature intense and students are required to read and present numerous scientific papers.

Dendritic Cell Biology. Understanding the biology and function of the immune system's professional antigen presenting cells, the dendritic cells, is a fast moving challenge. The course will cover the seminal papers in the field that have laid the groundwork for our current understanding of this group of complex cells. The major component of the class will emphasize student presentations of assigned reviews and journal articles. Presentations will include an overview (provided by the review article) and 2-3 papers per class.

History of Immunology. This course will examine the concepts that have shaped what we now consider pillars in our knowledge of the immune system. The course will cover the major events and discoveries that led to these established concepts and, where possible, the advent of technologies that facilitated these advances. The course will involve student participation in the form of presentations in selected areas as well as lectures by some individuals who were part of this history.

Neuroimmunology. The purpose of this course is threefold;

1. To provide students with a basic overview of immunology and neuroscience in conjunction with a specific focus on how neuro inflammatory processes affect the brain
2. To teach students basic neuroanatomy of the brain
3. To have students understand the clinical implications of neuroinflammatory diseases by attending rounds with clinicians.

How the immune system influences the brain is an emerging field in neuroscience research and is currently not being addressed in a graduate or medical course.

Innate Immunity. The study of innate immunity has made a resurgence in recent years and its critical role, not only in host defense against invading pathogens, but in the development of adaptive immune responses is now appreciated. This course will provide an in-depth look at selected aspects of the innate immune response including the cellular and molecular components critical to its development. The course will involve student presentations on selected topics.

Mucosal Immunology. The mucosal immune system is essentially the primary site of interaction between invading pathogens and the immune system. Mucosal immunity has always been a strength of the immunology community at UAB and is rarely covered at most other institutions. This class will provide in-depth analysis of the structural features that distinguish the mucosal immune system from the peripheral immune system. Features of innate and adaptive immunity as they relate to mucosal immune responses will also be covered. The course will involve student presentations on selected topics.

Journal Clubs

MIC 797-00: Cellular and Molecular Immunology Journal Club
 MIC 796-00: Neuroimmunology Journal Club
 MIC 737-VT: Mucosal Immunology Journal Club
 MIC 772-VT: Bacterial Pathogenesis Journal Club
 MIC 724-VT: Virology Journal Club
 MIC 785-00: Post-Transcriptional Regulatory Mechanisms
 MIC 786-00: Retrovirology Journal Club
 MIC 789-00: Journal Club in Biological Crystallography
 MIC 760: Autoimmunity Journal Club
 MIC 701-00: Inflammation Journal Club

Microbiology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.
Director:	Dr. Janet Yother
Phone:	(205) 934-9531
E-mail:	jyother@uab.edu
Web site:	www.uab.edu/micro

Theme Information

Objectives

The Microbiology Graduate Program is a part of the UAB Graduate Biomedical Sciences Program. We are an interdisciplinary program emphasizing the study of bacteria, viruses, fungi, and parasites. Over 40 faculty members from the Departments of Microbiology, Cell Biology, Biochemistry and Molecular Genetics, Genetics, Pathology, Medicine, Pediatrics, and Dentistry are involved in internationally renowned

research and the training of Ph.D.-level graduate students. Currently, more than 70 students are in training in the laboratories of our faculty. Primary areas of research interest include the genetics, physiology, and molecular biology of microbes and how microbial pathogens cause disease. Basic cellular processes, host-pathogen interactions, and the design of innovative strategies for the prevention and treatment of infectious diseases are under study in the laboratories of our faculty. Students graduating from the Program are well-versed in modern microbiology and have the experience to pursue a diversity of career opportunities.

Admission Requirements

Acceptance is based on undergraduate record (curriculum and grade point average [GPA]), Graduate Record Exam (GRE) scores, letters of recommendation, a personal statement of research and career interests, and past research activities. Domestic candidates who pass the first round of selection will be invited to visit UAB and meet the Immunology faculty and students.

The general requirements for acceptance into the Theme are:

- Minimum GPA of 3.0 on a 4.0 scale
- Combined verbal/quantitative GRE score #1100. New GRE scores should be at least 50% or more on each verbal/quantitative.
- A strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in immunology, cell biology, biochemistry, physics, genetics, organic and analytical chemistry are strongly encouraged. Undergraduate mathematics through calculus is also recommended. International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based), 250 (computer-based), or 100 (internet-based) or higher will be considered.

All students in the program receive a stipend (currently \$26,000), tuition and fees, and single coverage health insurance. Support is provided by the Theme, by the student's mentor, or through one of many fellowship programs.

Overview of the Program

The program emphasizes interdisciplinary training in all areas of modern microbiology. The first year of the program involves fundamental coursework and three research-based rotations in laboratories of the student's choosing. A qualifying examination is held in the second year. Advanced coursework, journals clubs, and dissertation research occur in the second and subsequent years. It is expected that completion of the program will require five to six years.

To broaden their research experience, students are introduced to research at the national and international levels through seminars presented by outside speakers and by attendance at national and international scientific meetings. Students take an active role in inviting and hosting speakers at UAB, and they are strongly encouraged to present their own results at outside meetings. An annual retreat held off-campus allows students to present their research and fosters collegiality between students, postdoctoral fellows, and faculty.

Microbiology Theme Faculty

The faculty listing for the Microbiology theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=MB>

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Refer to theme website for deadline information: http://www.uab.edu/micro
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information, contact Dr. Janet Yother, Program Director, UAB Microbiology Graduate Theme, University of Alabama at Birmingham, BBRB 661, Birmingham, Alabama 35294-2170.

Telephone (205)934-9531

Fax (205)996-6749

E-mail jyother@uab.edu

Web www.uab.edu/micro

Course Descriptions

Microbiology Theme

Graduate Biomedical Sciences Core Curriculum

Block 1 - Biochemistry/Metabolism

- Amino acids and primary protein structure
- Protein secondary and tertiary structure
- Posttranslational modifications and allosteric changes
- Glycobiology
- Lipid structure and metabolism
- Thermodynamic principles of biochemical reactions
- Enzyme kinetics
- Enzyme mechanisms and regulation
- Amino acid/nitrogen metabolism
- Glycolysis, gluconeogenesis and citric acid cycle
- Glycogenesis, glycogenolysis and pentose phosphate pathway
- Electron transport/oxidative phosphorylation

Block 2 - Genetics/Molecular Biology

- DNA recombination
- Nucleic acids & DNA replication
- Prokaryotic transcription
- Prokaryotic translation
- Prokaryotic gene regulation
- Eukaryotic genome organization
- Eukaryotic DNA replication
- Eukaryotic transcription
- Eukaryotic translation
- Eukaryotic gene regulation I
- Eukaryotic gene regulation II
- Mendelian inheritance
- Genetic variation and polymorphisms

Block 3 - Biological Organization

- Integrated systems: From organelles to organs
- Membrane structure/function

- Cytoskeleton
- Secretion
- Endocytosis, lysosomal targeting, protein degradation
- Biochemistry of signal transduction
- Cell cycle
- Cell-cell junctions and polarity
- ECM and ECM-cell interactions
- Cell motility
- Apoptosis
- Discipline of pharmacology
- Pharmacokinetics

Neuroscience Theme

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Co-Directors:	Dr. Scott Wilson, Dr. Tara Desilva
Phone:	(205) 975-5573
E-mail:	neuroscience@uab.edu
Web site:	http://www.neuroscience.uab.edu

Theme Information

The UAB Neuroscience Graduate Theme is a portal into the comprehensive neuroscience research opportunities at UAB. Students entering the Neuroscience Graduate Theme will find a home and anchor for their entire graduate experience. Throughout a student's entire Ph.D. career, the faculty and staff of the Neuroscience Graduate Program provide continued support, encouragement, and guidelines for success. The theme-based UAB Neuroscience Graduate Program seeks to equip and train students to become tomorrow's innovative neuroscientists by

- Teaching basic neuroscience ideas that become stepping stones to more in-depth research
- Providing unique professional and scientific avenues through which they can develop their presentation skills, learn critical thinking and how to design experiments
- Offering students the opportunity to choose neuroscience research from a multitude of options available through labs all over campus, not limiting students to a department but, rather, a discipline
- Providing opportunities for informal interaction with other students to discuss research, scientific writing, as well as a social network of peers to assist students in staying grounded. Students enter the neuroscience theme either through direct admit into the program or after their first year when moving into the permanent lab of a neuroscience mentor. Neuroscience theme students follow the neuroscience curriculum and do not join a departmental graduate program nor follow a departmental graduate program curriculum. The student becomes affiliated with the department in which the mentor holds his/her primary appointment for the purpose of the awarding of the degree.

Departments affiliated with the Neuroscience Theme include:

- Neurobiology
- Cell, Developmental & Integrative Biology
- Neurology
- Psychiatry

- Pediatrics
- Pathology
- Vision Sciences

ADMISSION TO THE PROGRAM

Admission to our program is highly competitive. We generally admit only 6-7 students each year. Students admitted to our students meet and usually exceed general requirements of:

- 3.0 or above undergraduate GPA
- GRE scores of 550 or better on each section for a minimum composite score of 1100 / > 300 on the new scoring system
- Strong background in biology, chemistry and/or mathematics
- Research experience, minimum 6 months bench research
- TOEFL (for international students) of greater than 500 on paper-based test and greater than 173 on computer-based test

Only online application materials will be accepted.

Required Application Materials

Domestic students: (No application fee)

- Application and personal statement
- Official transcripts from all undergraduate institutions attended
- Official GRE scores (Institutional code 1856)
- 3 letters of recommendation

International students: (\$60 application fee)

- Application and personal statement
- Official transcripts from all undergraduate institutions attended
- Official GRE scores (Institutional code 1856)
- Official TOEFL scores
- 3 letters of recommendation

All students accepted into the program receive

- Free tuition
- Free health insurance
- \$26,000/year stipend

CURRICULUM

All first year students follow the same curriculum, designed to provide them with the foundations they will need as they move into permanent labs and begin their own research projects. Students begin their year attending the Intro to Neurobiology course at the Dauphin Island Sea Lab on Dauphin Island, Alabama, on the Gulf of Mexico. While there, the student is exposed to a variety of learning opportunities, including lectures, hands-on experiments, and going out into the Gulf to "fish" for marine life. Students live at Dauphin Island, dorm style, for 2 1/2 weeks in late summer, working hard with UAB faculty and teaching assistants and playing hard during their downtime. This course provides a very unique opportunity for neuroscience students.

Overview of General Requirements --

- Students are required to successfully complete 2 electives prior to their last semester.
- Registration for the Student Summer Seminar Series is required for each student each summer semester. Participation includes

attendance, completion of an evaluation form for each speaker, and the presentation of a 20 minute PowerPoint talk and 10 minute Q-A session. Students will present once each summer. First year students are excluded from presenting.

- Students must register for and attend a seminar series of their choosing (with advice from their mentor) each semester until graduation.
- A biostatistics course is required - BY 755, and is taken during the spring semester.
- All students must successfully complete an ethics course. This is taken during the fall semester of the student's 2nd year (GRD 717).
- Students must register for a journal club of their choosing (with advice from their mentor) each fall and spring semester until graduation.
- Two first-authored papers accepted to an appropriate journal are required unless the student's committee recommends/approves differently.
- Students must be registered for a minimum of 9 hours during the Fall semester, 9 hours during the Spring semester, and 9 hours during the Summer semester each year.
- 18 credit hours of dissertation research are required before graduation. This means you must have a minimum of two semesters between the semester of your Qualifying Exam and your final defense semester.
- You must be registered for at least 3 credit hours during the semester in which you plan to graduate, unless told otherwise.

Neuroscience Theme Faculty

The faculty listing for the Neuroscience theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=NGP>

Additional Information

Deadline for Entry Term(s):	Consult theme website for deadline information: http://www.neuroscience.uab.edu
Deadline for All Application Materials to be in the Graduate School Office:	Consult theme website for deadline information: http://www.neuroscience.uab.edu
Number of Evaluation Forms Required:	3
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact:

Patricia Matthews

Program Manager
 UAB Neuroscience Graduate Theme
 SHEL 120D / 1825 University Boulevard
 Birmingham, AL 35294-2182
 Tel: 205.934.7034
 Fax: 205.996.6749
 Email: pm1@uab.edu

Pathobiology and Molecular Medicine Theme

Degree Offered:	Ph.D.
Directors:	Dr. Michelle V. Fanucchi and Dr. Rakesh P. Patel
Program Manager	Kristin Boggs
Phone:	(205) 934-7810
E-mail:	pbmm@uab.edu
Web site:	http://www.uab.edu/pbmm

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Theme Information and Course Requirements

The Pathobiology & Molecular Medicine (PBMM) Graduate Program at UAB is the successor of the popular and highly successful Integrative Biomedical Sciences Graduate Program established in 1999. PBMM represents an expansion of the Integrative Biomedical Sciences Program and is designed to give students the very best multidisciplinary training within the emerging and exciting field of molecular medicine. The main objective of the program is to expose students to a diverse faculty with research interests that range from molecules - to whole organisms - to disease processes - to new therapies. Our premise is that students, when trained in basic principles of molecular and cellular biology, in addition to organ-based physiology, pharmacology and pathology, will be prepared to study biological processes at any level of organization. The important biomedical issues of today are sufficiently complex that the successful investigator must be able to tackle these issues using integrated, multifaceted approaches.

The advantage of joining PBMM is that students have full access to all 350 faculty within the GBS, including those not within PBMM. This gives students the broadest opportunity possible to move their studies in the direction that they find most interesting. In addition, PBMM faculty utilize state-of-the-art resources and ideas to drive the field of molecular medicine forward. Within PBMM, you will have the opportunity to immerse yourself at the leading edge of biomedicine and share in the excitement first-hand by working alongside research pioneers.

During your first year, you will complete a series of rigorous courses that includes training in biochemistry, molecular biology, genetics, cellular physiology and pathobiology. Due to the interdisciplinary nature of Graduate Biomedical Sciences, students have the option to select their advanced, elective courses from courses numbered at the 700-level and above in participating departments. Those include courses within the School of Medicine, School of Public Health, and other Joint Health Sciences. Courses should be chosen in consultation with the student's mentor and committee to ensure coursework supports his/her research. You will also have the opportunity to take courses within designated "Focus Areas." These Focus Areas are organized around specific research strengths represented by faculty within the PBMM and address important issues in diseases such as diabetes, heart disease and cancer among others. In addition, you will have full access to courses offered by other programs within the GBS where strengths exist in multiple fields including immunology, neuroscience, structural biology and others. There will also be ample time allotted for you to attend research seminars, learn to make scientific presentations and to perform 3 laboratory rotations.

These rotations are designed to give the student a practical introduction to bench research and to help the student choose a faculty mentor. After the first year there will be additional coursework directed in your area of interest, but the main focus will be on intensive research training within the laboratory. Here, guided by your mentor and graduate advisory committee, you will develop critical technical and analytical skills that will form the basis of your dissertation research.

Graduates of the PBMM training program are fully prepared to address the most complex and challenging issues in disease biology and therapy and are positioned to pursue work in academic, industrial or government research or related positions. Training for the PhD degree is generally completed within four to six years, depending on the student's background and training goals.

Admission Requirements Undergraduate Education

A **baccalaureate degree in the natural or physical sciences** is required. Undergraduate level courses in organic and analytical chemistry, cell biology, biochemistry and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended.

Grades & Scores

The Graduate School recommends that entering students have a minimum grade point average (**GPA**) of 3.0 on a 4.0 scale and a minimum combined verbal/quantitative score on the Graduate Record Exam (**GRE**) of 300 (new test) or 1100 (old test).

International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 80 (internet-based) or higher will be considered.

Research

Most students admitted to the program have undergraduate or postgraduate **research experience**.

Application Review

Applications are reviewed by the GBS Admissions Committee, representing all GBS thematic programs.

Acceptance will be based on a combination of factors including:

- Undergraduate performance (both the curriculum and grade point average)
- Letters of recommendation
- GRE scores
- A personal statement of research and career interests
- Previous research experience
- Personal interview, at program expense (international applicants may be interviewed by phone or video conference) Admission to our Programs is very competitive and the number of positions is limited; thus not every qualified applicant can be offered a position.

Academic Program

Year 1

Courses

Integrated, science-based teaching is the foundation of every PBMM course. You will learn from a team of faculty that will contribute their expertise in the basic biology and physiology of each topic coupled with an emphasis on understanding relevant diseases, clinical correlates, and therapeutic approaches. The lectures also emphasize the scientific techniques and experimental approaches that are essential to the concepts being discussed. In addition, many instructors assign journal readings and independent projects, which may include Web-based searches or literature reviews, to actively engage you in the learning process.

- First year students in all Graduate Biomedical Sciences Themes take a common 12-week core curriculum emphasizing the fundamentals of biochemistry, genetics, and cell biology. This coursework will include an overview of the principles of biochemistry, metabolism, molecular biology, genetics and biological organization. This will be followed by an integrated course in experimental medicine that focuses on mechanisms that drive specific diseases and exposes students to approaches being taken by UAB scientists who are addressing disease-based problems. Additional coursework in the first year will include integrative physiology, pathophysiology, endocrinology, immunology, pharmacology and molecular medicine.
- Journal Club

You will present relevant published research papers to help hone your presentation skills and to teach you to learn to think like a scientist.

- Seminar Series

Faculty from participating departments, other UAB faculty, and faculty from other institutions discuss their latest research.

- Lab Rotations (3 rotations of 10 weeks each)

Based on your specific interests, you will choose from a wide range of research laboratories available to you. This "hands on" research experience will provide you with the background to decide on a laboratory and mentor to guide you through your dissertation research.

Second year and beyond - Qualifying examination, courses, journal clubs, research, completion of degree.

Qualifying examination. Students must pass a Qualifying Examination that assesses their general knowledge, ability to read the literature, and ability to formulate and defend testable hypotheses. The examination involves a written proposal and oral defense of the proposal.

Journal Clubs. From the second year until completion of the program, students participate in a Journal Club related to their specific area of interest. The purpose of the journal club is to enhance the ability to critically read the literature and to stay abreast of current findings in the field.

Pathobiology and Molecular Medicine courses. Advanced courses in areas relevant to the student's area of interest are required and may be completed anytime from the second year on. Students are encouraged

to take these courses as early as possible in order to achieve the most benefit in their training.

Dissertation research. After completion of the Qualifying Examination, and no later than the third year, the student forms a dissertation committee comprised of five faculty members (including the mentor) whose expertise will be beneficial in helping direct the research and course of study.

Awarding of the PhD degree. The PhD is awarded upon completion of the academic requirements and defense of the dissertation. The dissertation consists of a written document that is expected to include published papers or manuscripts in preparation, along with a scholarly introduction and discussion of the work that has been completed. A successful private defense of the dissertation in front of the dissertation committee is then followed by a seminar presentation and public defense of the dissertation as the final step in completion of the PhD degree.

Student Support

All students accepted into PBMM receive a **competitive annual stipend** and **fully paid tuition and fees**. Single coverage **health insurance is also provided** at no cost to the student through VIVA Health UAB. **The annual stipend for the 2013-2014 academic year is \$26,000.** The total annual award value, including stipend, tuition, fees and health insurance is over \$37,000. Stipends are reviewed and updated regularly.

First-year students are funded through the PBMM Graduate Program by Graduate School Fellowships and occasionally by other national and University fellowships. In subsequent years, students are supported through their advisor's research grants, institutional funds or training grants. In addition, highly qualified students are encouraged to apply for individual fellowship awards, with the guidance of their advisors. See Fellowships and Awards for additional fellowship information and resources.

Pathobiology and Molecular Medicine Theme Faculty

The faculty listing for the Pathobiology and Molecular Medicine theme is located at <http://services.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=PBMM>

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Please refer to Theme Website: http://www.uab.edu/pbmm
Letters of Recommendation Required:	Three
Entrance Tests (University Code: 1856)	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact:

Theme Director

Michelle V. Fanucchi, Ph.D.
205.934.7230 (office)

fanucchi@uab.edu

Theme Co-Director

Rakesh P. Patel, Ph.D.
205.975.9225 (office)
rakeshp@uab.edu

Kristin Boggs
Theme Manager
Tel: 205.934.7810 (office)
Fax: 205.996.6749
Email: pbmm@uab.edu

Grad School of Business

Dean: Dr. Eric P. Jack

The Collat School of Business offers the following graduate programs:

Degree Programs

- Master of Accounting (M.Ac.)
- Master of Business Administration (M.B.A.)
- Master of Science in Management Information Systems (M.S.MIS) - Online only

Certificate Programs

- Graduate Certificate in Social Media
- Graduate Certificate in Technology Commercialization and Entrepreneurship

Located in the heart of Alabama's business center, the UAB Collat School of Business offers an engaging learning environment with classrooms extending well beyond the walls of the UAB campus. Our unique location allows our faculty to integrate the practical experiences of the State's leading companies - from Fortune 500 corporations to entrepreneurial start-ups - into the programs we offer. Our students gain valuable, real-world experience through a wide variety of internships and other opportunities in the business community.

The UAB Collat School of Business is accredited at the baccalaureate and master's level by AACSB International and holds separate AACSB International accreditation of the undergraduate and master's programs in accounting. AACSB International is the largest and longest standing specialized accrediting agency for business and accounting programs in the world and represents the highest standard of achievement. UAB is among only 184 universities worldwide to achieve this seal of excellence in both business and accounting.

*For additional information about our programs or updates approved prior to the publication of a new Graduate Catalog, please see the Collat School of Business website.

Accounting and Finance

Degree Offered: Master of Accounting

Director: Dr. Arline Savage

Phone: (205) 934-8820

E-mail: arlsav@uab.edu

Web site: <https://www.uab.edu/business/degrees-certificates/master-of-accounting>

Admission

Prospective students should use this **checklist** to obtain specific requirements for applying to Graduate School.

Application Deadlines*

*Deadlines for On-campus Master of Accounting Program:

Fall semester: July 1st

Spring semester: November 1st

Summer semester: April 1st

*Deadlines for the Online Master of Accounting Program:

Fall semester: July 15th

Spring semester: November 20th

Summer semester: March 20th

Required Documents

- **Application form** including 2 **evaluation forms/letters of reference**
- Current resume detailing work experience
- Official transcripts from all colleges and universities attended sent directly by the Registrar or responsible head of the institution to the UAB Graduate School, 1720 2nd Ave. S., LHL 103, Birmingham, AL 35294-0013.
- GMAT score* sent directly from the testing agency.

International Applicants

The following additional documents are required of international applicants:

A minimum composite score of 80 with a minimum score of 20 in each section of the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service (ETS, www.toefl.org) within the five-year period immediately preceding the desired term of enrollment. An ILETS score

A "catalog match" transcript evaluation report prepared by Educational Credential Evaluators, Inc. (ECE, www.ece.org).

Admission Requirements

1. A bachelor's degree in accounting from an institution accredited by AACSB International received within the five-year period immediately preceding the desired term of enrollment (or a bachelor's degree in any discipline from a regionally accredited institution). Applicants who do not have an undergraduate accounting degree will be required to complete up to nine foundation courses in addition to the classes listed in the Program Description section and will be required to maintain at least a B average in the foundation courses numbered 300 and above. The foundation courses that must be completed are as follows:

- AC 200 Principles of Accounting I
- AC 201 Principles of Accounting II
- AC 300 Financial Accounting I
- AC 310 Financial Accounting II
- AC 304 Accounting Information Systems
- AC 401 Cost Accounting
- AC 402 Income Taxation I
- AC 423 External Auditing
- AC 430 Financial Accounting III

2. A minimum score of 500 on the Graduate Management Admission Test (GMAT) administered by the Graduate Management Admission Council (GMAC, www.gmac.com) within the five-year period immediately preceding the desired term of enrollment. **The GMAT is waived for**

UAB accounting graduates and other students who take all of the foundation accounting courses at the undergraduate level at UAB.

3. Satisfactory academic performance as measured by the undergraduate accounting grade point average. [Note: UAB undergraduates planning to pursue the M.Ac. degree should take and **AC 423** as their two accounting electives. If they do not take **AC 423**, they should plan to take **AC 523** as an elective in the M.Ac. program before taking **AC 606**.]

Admission to the program is competitive. The number of qualified applicants admitted may be limited as deemed appropriate by the Master of Accounting Program Committee.

The Department of Accounting and Finance (ACFN) in the Collat School of Business is proud to offer a Master of Accounting (M.Ac.) program that holds a separate accreditation by the Association of Advance Collegiate Schools of Business (AACSB), the highest honor a business school can achieve for its accounting programs.

Courses in the program are offered in the classroom primarily in an evening format, completely online, or a combination of both. Our dedicated and caring ACFN faculty are exceptional teacher scholars and teach all courses in the M.Ac. program; in the classroom and online.

High-achieving UAB accounting undergraduate students interested in pursuing the M.Ac. degree should look into the UAB Fast-Track Master of Accounting Program.

Program Description - Master of Accounting

Students can pursue the general Master of Accounting program or chose a concentration in Internal Auditing. A Fast-track Master of Accounting program is open to high achieving undergraduate students pursuing a BS degree in accounting at UAB. Students can also take courses offered through the Accounting and Finance Department to prepare for the CPA and other certifications.

Master of Accounting Program

The Master of Accounting program consists of 30 semester hours of graduate credit - 21 hours of required courses and 9 hours of approved electives:

Required courses (7):

- LS 557 Business Law for Accountants (Offered in Fall only)
- AC 514 Governmental and Not-for-Profit Accounting (Offered Fall, Spring, Summer)
- AC 580 Advanced Financial Accounting (Offered in Fall only)
- AC 600 Current Topics in Financial Accounting (Offered in Spring only)
- AC 606 Advanced Auditing and Attestation (Offered in Spring only)
- AC 620 Tax Entities (Offered in Fall only)
- AC 672 Advanced Information Technology Auditing (Offered in Spring only)

*Elective courses (3):

Courses numbered 500/600 level with AC, LS, or MBA prefix may be chosen with approval of the M.Ac. Program Director.

*MBA 601, MBA 608 and MBA 637 will not apply toward the M.Ac. degree.

Master of Accounting with an Internal Auditing Concentration

Students who have not previously taken an internal auditing course at the undergraduate level can earn a Master of Accounting degree with an Internal Auditing Concentration by completing the following program of study. The Master of Accounting Program with an Internal Auditing Concentration consists of 30 semester hours - 24 hours of required courses and 6 hours of approved electives:

Required courses (8):

- LS 557 Business Law for Accountants
- AC 513 Internal Auditing
- AC 514 Governmental and Not-for-Profit Accounting
- AC 580 Advanced Financial Accounting
- AC 600 Current Topics in Financial Accounting
- AC 606 Advanced Auditing and Attestation
- AC 620 Tax Entities
- AC 672 Advanced Information Technology Auditing

*Elective courses (2):

- Choose from:
- AC 564 Accounting Internship
- AC 572 Forensic Accounting and Information Technology Auditing
- AC 573 Fraud Examination
- AC 612 Corporate Governance

*Other courses may be approved by the M.Ac. Program Director.

Fast-Track Master of Accounting Program

The Fast-track Master of Accounting (M.Ac.) Program is open to high-achieving undergraduate students pursuing a BS degree in accounting at UAB. Students admitted to the Fast-Track M.Ac. Program can take up to 12 hours of graduate courses at undergraduate tuition rates while they are completing their Bachelor's degree in accounting and have these graduate courses count toward the M.Ac. degree as long as A's or B's are earned in the courses. After earning the BS degree, students in the Fast-Track Program continue pursuing the M.Ac. degree as described above. Students in the Fast-Track M.Ac. program are not required to take the GMAT.

Fast-Track M.Ac. Program Admission Requirements

To be admitted to the Fast-Track Master of Accounting Program, students must:

- Have completed at least 15 hours of coursework at UAB.
- Be within 45 hours of graduation.
- Have a cumulative GPA of 3.4 or higher.
- Have completed the following courses with at least a “B” in each course and have at least a 3.3 average in the three courses:

AC 300 Financial Accounting I

AC 304 Accounting Information Systems

AC 310 Financial Accounting II

Students who think they are eligible for the Fast-Track M.Ac. Program should contact the M.Ac. Program Director at the Collat School of Business.

Uniform CPA Examination

Eligibility requirements for sitting for the Uniform CPA examination vary among the states. The state of Alabama, through its Accountancy Laws and the Alabama State Board of Public Accountancy (ASBPA, www.asbpa.state.al.us), requires that applicants for the Uniform CPA Examination hold a baccalaureate degree from an accredited institution and possess a total of 150 semester hours of postsecondary education, including at least 33 semester hours of accounting in specified areas at the upper-division or graduate level. UAB students can meet these requirements in several ways:

1. By obtaining an undergraduate accounting degree (or its equivalent) and completing certain additional course work as specified under the Board’s Accountancy Rules. Students interested in this option and those interested in this option who already hold degrees from other institutions should contact the accounting advisor in the Collat School of Business, for specific guidance.
2. By obtaining a Master of Accounting degree. Those who hold a Master of Accounting degree from an accounting program accredited by AACSB International (as is UAB’s) meet the academic requirements for taking the Uniform CPA Examination.
3. By obtaining a Master of Business Administration degree. Those who already hold an undergraduate accounting degree (or its equivalent) and who desire a graduate degree in business may establish their academic eligibility under the Board’s Accountancy Rules by completing as part of their M.B.A. requirements certain graduate accounting course work as determined by the Master of Accounting Program Director. Students interested in this option should first contact the Program Coordinator in the Graduate School of Management.

Other Professional Accounting Certifications

Other examinations leading to professional certification (CMA, CIA, CFE, CISA, etc.) generally do not require academic course work beyond the baccalaureate degree. Students interested in other accounting

certifications should contact any member of the accounting faculty for further information.

Business Administration

Degree Offered:	Master of Business Administration (M.B.A.)
Director:	Kenneth L. Miller, MBA, EdD
Phone:	(205) 934-8817
E-mail:	klmiller@uab.edu
Web site:	www.uab.edu/mba

Admission

Prospective students should use this **checklist** to obtain specific requirements for applying to Graduate School.

Application Deadlines

Fall semester - July 1st

Spring semester - November 1st

Summer semester- April 1st

**International applicants should apply at least 6 months in advance of the deadline in order to ensure processing of all Visa paperwork*

Required Documents

- **Application form** including 2 **evaluation forms/letters of reference**
- Current resume detailing work experience
- Official transcripts from all colleges and universities attended sent directly by the Registrar or responsible head of the institution to the UAB Graduate School, 1720 2nd Ave. S., LHL 103, Birmingham, AL 35294-0013.
- GMAT score* sent directly from the testing agency. (it is recommended that you repeat the GMAT if score is below 480)

**GMAT requirement is waived for applicants holding terminal degrees. Applicants holding master degrees from regionally accredited institutions can substitute related standardized test score for GMAT requirement.*

Additional Documents Required for International Applicants

- TOEFL IBT score of 80 or IELTS of 6 (international applicants only)
- General academic credentials evaluation (**ECE** or **WES** report) for international applicants

Non-Degree Seeking Admission

Candidates interested in non-degree seeking admission must have an undergraduate cumulative GPA of 3.0 or higher. Non-degree seeking students are limited to earning 12 hours credit in this status. The option to enter as non-degree seeking will be offered to candidates who miss the application deadline for applying to the MBA program, but who submit all materials prior to the beginning of the term and meet admission requirements, provided that there are seats available. We will require a resume, copies of transcripts, and GMAT scores along with the application. Permission of the MBA Coordinator is needed in order to register for classes as a non-degree seeking student.

Contact the UAB Collat School of Business, Graduate School of Management with any questions concerning UAB's MBA program.

Master of Business Administration

The UAB MBA is designed to provide competency in management and to acquaint the student with all aspects of business activity. In order to deal effectively with increasingly complex and ambiguous problems of business and organizations, managers require training in sophisticated analytical techniques, appreciation for the behavioral facets of management, as well as an ability to anticipate and adapt to changes in an industrial environment. The program stresses critical thinking and is decision oriented, focusing on key aspects of business administration.

The MBA program is suitable not only for students with baccalaureate degrees in business but also for those who have degrees in engineering, the sciences, or liberal arts.

UAB's MBA program offers evening classes that meet once a week and online courses. Students may choose to follow either a one or two-year-plan of study to guarantee graduation with a specified timeframe, or pursue the degree at their own pace. Students have 5 years from term of entry to complete degree requirements.

Concentrations are available in finance, information technology management, marketing, and health care management. Dual Degree options available include MBA/MPH and MBA/MSHA and require applicants to apply and be accepted to both degree programs.

Program Requirements

Business Boot Camp

Students must complete a business boot camp before beginning class. The boot camp is an online, self-paced offering equivalent to 8-12 hours of coursework.

Quantitative Requirement

Applicants are expected to have completed a pre-calculus class with a grade of "C" or better within the last five years. If an applicant does not meet this requirement, they may be admitted with the contingency of satisfying the requirement during their first term of enrollment.

More information on these requirements can be found on the Collat School of Business website.

MBA Degree Requirements

Total Hours for Degree: 36 (12 courses)

Requirements	Hours
Tools and Perspectives on Business (12 Hours)	
MBA 601 Accounting and Finance for Managers	3
MBA 631 Management and Organizations	3
MBA 642 Economics for Managers	3
MBA 662 Quantitative Analysis for Business Managers	3
Functional Core (15 Hours)	
MBA 608 Strategic Cost Analysis and Decision Making	3
MBA 619 Information Technology and Business Strategy	3
MBA 621 Topics in Corporate Finance	3
MBA 637 Operations and Supply Chain Management	3
MBA 651 Marketing Strategy	3

Capstone (3 Hours)		
MBA 634 Strategic Management		3
Electives (6 Hours)		6
Total Hours		36

Degree with Concentration requires additional approved elective in selected area of study: 39 Total Hours (13 Courses).

MBA Plans of Study (Full Time 1-Year-Plan and Part time 2-Year-Plan)

Management, Information Systems, and Quantitative Methods

Degree Offered:	Master of Science in Management Information Systems (MS MIS)
Director:	Allen Johnston
Phone:	(205) 934-8870
Email:	ajohnston@uab.edu
Web site:	http:// misdegree.businessdegrees.uab.edu/ lp-mis-short/

Admission

Prospective students should use this **checklist** to obtain specific requirements for applying to Graduate School.

Application Deadlines

Fall semester - July 15th
Spring semester - November 15th
Summer semester- April 15th

Required Documents

- Online application with a \$45 application fee or \$60 international application fee
- Current resume
- Personal Statement: statement must include the student's professional career goals and how they faced and overcame challenges in their life
- References: 2 from supervisors, trainers, or instructors who can confirm requisite knowledge and skills as identified with the admission qualifications

Admission Requirements

Applicants for the MS MIS program must have graduated with a baccalaureate degree in an information technology/systems related field from a regionally accredited college or university with a minimum overall grade point average (GPA) of 3.0 on a 4.0 scale. Those not meeting this requirement must have:

- Completed a baccalaureate degree in other areas of study from a regionally accredited college or university, or completed another graduate degree; AND
- Completed the UAB MS MIS Bridge Program; OR

- Submitted evidence to UAB as to significant work experience in IS/IT/ computer programming, enterprise systems, databases, and/or system design and analysis; OR
- Submitted evidence to UAB as to IS/IT/Computer industry certifications in computer programming, enterprise systems, databases, and/or system design and analysis.
- Applicants must provide evidence of relevant work experience (a minimum of 3 years of experience is preferred)
- Applicants must have a GMAT score of 500 or higher.

Those not meeting this requirement can:

- Submit a GRE combined verbal and quantitative score of 940 or higher (GRE scores may not be more than 5 years old), OR
- Show 5 years of relevant work experience
- Show documentation of completing a graduate degree in any discipline with a minimum GPA of 3.0 on a 4.0 scale

International Applicants

International applicants whose native language isn't English are required to show proof of English proficiency by submitting a TOEFL, IELTS, or PTE Academic test score. Official test scores are required and should be sent directly from the testing agency to UAB. Scores should not be more than 2 years old. The minimum score requirements are as follows:

- TOEFL (Test of English as a Foreign Language) score of 550 on the paper-based examination, 213 on the computer-based version, or 80 on the Internet-based version
- IELTS (International English Language Testing Service) score of 6.0 overall with at least a 5.0 on each section of the examination

The UAB Collat School of Business, Master of Science in Management Information Systems (MS MIS) program focuses on the business side of information systems and how to strategically position technology to maximize value for an organization. This program provides the broad perspective needed to advance in the information systems management field, and allows students to tailor their education based on specific career goals by focusing in one of three areas: **Web and Mobile Development, Information Security, or IT Management**. UAB's emphasis is on the managerial aspects of information systems, and although the program does provide opportunities for skill development in the latest technologies, the goal of the program is to help those currently working in information systems related fields move into managerial positions by improving their understanding of how to use the latest information technologies to benefit organizational stakeholders, such as managers, organizations, employees, customers and partners.

The Management of Information Systems field is growing at an exponential rate as organizations struggle to stay current with new and emerging technologies, such as mobile applications and social media. Professionals are needed that can help organizations understand the business potential of these new technologies, how to develop new applications to meet changing market dynamics, and how to secure these systems from threats. Students graduating from this program are prepared to succeed in an exciting and dynamic career field combining a solid technical information systems foundation with business skills so they can immediately contribute to solving business problems, and can drill down into specific fields, such as IT management, web and mobile development or information security.

Program Details

The MS MIS program is taught completely online. Most students can complete degree requirements within 1.6 years. Concentrations are available in Web and Mobile Development, Information Security, and IT Management. Each concentration consists of twelve semester hours. The Collat School of Business is accredited by AACSB—The Association to Advance Collegiate Schools of Business.

Program Requirements

Core Courses:

IS 611 Information Technology and Business Strategy

IS 612 IT Governance and Management

IS 613 Information Security Management

IS 615 Social Media/Virtual Communities

IS 617 Introduction to Business Intelligence

IS 618 Technology Based Project Management

Concentrations:

Information Security

IS 620 Attack and Penetration

IS 621 Incident Resp. / Business Continuity

IS 622 CISSP I

IS 623 CISSP II

Web and Mobile Development

IS 630 Web Development

IS 631 Web Interface Design/Content

IS 616 Web Analytics

IS 633 Mobile Applications

IT Management

IS 640 Technology Plans and Capital Budgeting

IS 641 Leadership in IT

Any 2 IS or WDSM Concentration Courses (6 hours)

Management Information Systems

Degree Offered:	Master of Science in Management Information Systems (MS MIS)
Director:	Allen Johnston
Phone:	(205) 934-8870
Email:	ajohnston@uab.edu
Web site:	http:// misdegree.businessdegrees.uab.edu/ lp-mis-short/

The UAB Collat School of Business, Master of Science in Management Information Systems (MS MIS) program focuses on the business side

of information systems and how to strategically position technology to maximize value for an organization. This program provides the broad perspective needed to advance in the information systems management field, and allow students to tailor their education based on specific career goals by focusing in one of three areas: **Web and Mobile Development, Information Security, or IT Management**. UAB's emphasis is on the managerial aspects of information systems, and although the program does provide opportunities for skill development in the latest technologies, the goal of the program is to help those currently working in information systems related fields move into managerial positions by improving understanding of how to use the latest information technologies to benefit organizational stakeholders, such as managers, organizations, employees, customers and partners.

The Management of Information Systems field is growing at an exponential rate as organizations struggle to stay current with new and emerging technologies, such as mobile applications and social media. Professionals are needed that can help organizations understand the business potential of these new technologies, how to develop new applications to meet changing market dynamics, and how to secure these systems from threats. Students graduating from this program are prepared to succeed in an exciting and dynamic career field combining a solid technical information system foundation with business skills so they can immediately contribute to solving business problems, and can drill down into specific fields, such as IT management, web and mobile development or information security.

Program Details

The MS MIS program is taught completely online. Most students can complete degree requirements within 1.6 years. Concentrations are available in Web and Mobile Development, Information Security, and IT Management. Each concentration consists of twelve semester hours. The Collat School of Business is accredited by AACSB—The Association to Advance Collegiate Schools of Business.

Program Requirements

Requirements		Hours
Core Courses:		
IS 611	Info Tech and Bus Strategy	3
IS 612	IT Governance and Management	3
IS 613	Info Security Mgmt	3
IS 615	Soc Media/Virtual Communities	3
IS 617	Intro to Business Intelligence	3
IS 618	Tech Based Project MG	3
Concentration Courses:		
Information Security		
IS 620	Attack and Penetration	3
IS 621	Incident Resp./Bus. Continuity	3
IS 622	CISSP I	3
IS 623	CISSP II	3
Web and Mobile Development		
IS 630	Web Development	3
IS 631	Web Interface Design/Content	3
IS 616	Web Analytics	3
IS 633	Mobile Applications	3
IT Management		
IS 640	Tech Plans & Capital Budgeting	3
IS 641	Leadership in IT	3

Any IS or WDSM concentration course		3
Any IS or WDSM concentration course		3
Bridge Courses:		
IS 591	Intro Networking / Comp Prog	3
IS 592	Systems Analysis and Database	3

Grad School of Dentistry

Dean: Dr. Michael S. Reddy

The School of Dentistry offers degree programs leading to a Master of Science in Dentistry and the DMD/PhD in Dentistry. Advanced clinical specialty training and research, leading to the degree of Master of Science in Dentistry, is offered to meet two areas of need: the preparation of qualified teachers and investigators in the various branches of academic dentistry and the preparation of fully trained dental specialists.

The UAB School of Dentistry DMD/PhD program prepares students for an exciting career in dental academics through an innovative integrated clinician scientist training program. Students in the program are allowed to apply credits earned in both dental and graduate school towards a specialized program earning both a DMD degree and a PhD degree in a biomedical science.

Dentistry (M.S.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.
Director, Dentistry:	Dr. Amjad Javed
Phone:	(205) 996-5124
E-mail:	javeda@uab.edu
Web site:	www.dental.uab.edu

Program Information

Advanced clinical specialty training and research, leading to the degree of Master of Science in Dentistry, is offered to meet two areas of need: the preparation of qualified teachers and investigators in the various branches of academic dentistry and the preparation of fully trained dental specialists. The program is a combination of the conventional work for the M.S. degree plus the achievement of proficiency in some phase of clinical dentistry. The course of study requires a minimum of two academic years; most students will require three years to complete the work. The applicant must be a graduate of an accredited school of dentistry, or an undergraduate school and must have achieved, in both pre-dental and dental requirements, a superior scholastic record.

At the time of enrollment in the Graduate School, the student is assigned an appropriate faculty advisor, who works with the student in outlining a course of study consistent with objectives. This curriculum must cover the three areas of a selected phase of clinical dentistry, a related basic health science, and research.

Major and Minor

The major field of study must be selected from the following: dental biomaterials, endodontics, general dentistry, hospital dentistry, maxillofacial prosthetics, oral surgery, orthodontics, pediatric dentistry, periodontics, prosthodontics, public health dentistry, or oral biology. The program requires a minimum of 30 graduate credits. Not less than 18 semester hours of credit in the program must be in the major subject, with the minimum acceptable grade being B. A minor must involve at least six

semester hours of study in one or two basic health science departments related to the student's major and research interests.

By the time the student has been in residence one year and has finished some of both major and minor courses, the student and the advisor should recommend to the Graduate School dean at least two additional graduate faculty members, one from outside the student's specialty area, for appointment to the graduate study committee. The student should discuss with his/her committee plans for the remaining course of study, including a proposed thesis title and outline of experimental design. Depending upon the nature of the research plan, it may be desirable for a different advisor to be appointed, serving either as co-chair or as new chair of the graduate study committee. At this time, demonstration of a reading knowledge related to literature review, competence in research and experimental design, understanding of biostatistics, experience with computer and other techniques may be required, as appropriate to the student's investigation.

Admission to Candidacy

When the graduate study committee is satisfied that the student is prepared to undertake the research, the student is admitted to candidacy for the master's degree. This step should be taken at least two semesters before the anticipated date of completion of the program.

Research and Thesis

Sufficient research work to train the candidate in the principles and methods of scientific investigation is required. The research project should involve the student's own intensive work in some area of dentistry, preferably related to the basic health sciences. The thesis is based on the research study and must show the candidate's ability to delineate a problem, logically plan its solution, and present the results of the work in an orderly fashion. Familiarity with the literature of the field is expected.

Final Examination

The final oral examination is administered by the student's graduate study committee before the deadline is set by the Graduate School. The examination begins with oral presentation and defense of the thesis and may include any work fundamental thereto. At the close of the examination, the committee votes on the candidate, taking into account all of the work undertaken. Majority approval is required.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Variable
Number of Evaluation Forms Required:	Three
Entrance Tests	DDS (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information, contact the graduate program director, Dr. Amjad Javed, University of Alabama School of Dentistry, School of

Dentistry Building, SDB 714, 1919 Seventh Avenue South, Birmingham, AL 35294-0007.

Telephone 205-934-5407
 Fax 205-934-0208
 E-mail javeda@uab.edu
 Web www.dental.uab.edu

Master of Science with Emphasis in Oral Biology

The School of Dentistry in collaboration with the joint basic science Departments at The University of Alabama offers graduate studies leading to a Master of Science degree with emphasis in Oral Biology. The objective of the program is to relate basic biological sciences to health and disease of the oral cavity. This program is designed for individuals holding a D.D.S., D.M.D., or B.S. in Science (e.g. biology, chemistry etc) with little or no experience in basic research. This program will provide insight into dental academics and teaching in basic or applied research.

Students are required to pursue studies in oral biology and in the basic biological sciences. These studies include course work, seminars, journal club, and a laboratory component. Course work includes formal lectures from within the School of Dentistry and courses offered by the basic sciences departments, School of Public Health and the School of Medicine. The seminars and journal club include the “Dean’s Seminar Series” and the Oral and Skeletal Biology Journal Club and other Research seminars within UAB. The Seminars cover a wide array of topics relevant to various research areas as well as other disciplines of dentistry or dental education. A significant portion of the program is devoted to the design and completion of a thesis research project in the form of one publishable paper in a reputable scientific journal which is a requirement of the program. Thesis research will be carried out under the supervision of a faculty member. Faculty involved in the Master of Science program with emphasis in Oral Biology are actively engaged in research that represents a variety of oral and basic biomedical disciplines within the UAB. The diversity of the research interests offers opportunities for students to pursue studies in a stimulating research environment.

The program requires a **minimum of 30 graduate credits**. Of these, at least 24 credits must be selected from graduate-level courses approved for the program and a minimum of 6 credits at the master’s research level. Each student must orally defend a master’s thesis based on their research. If the applicant holds a D.D.S. or D.M.D. degree, the Master in Science may be combined with a clinical dental specialty training only after acceptance into the clinical program.

Admission

Applicants must hold a B.S., D.D.S., or D.M.D., or an equivalent degree and should possess a cumulative grade-point average of at least 3.00 on a 4.00 scale. Standardized test such as GRE or DAT is required for all applicants. Students whose first language is not English must earn a score of 560 or better on the Test of English as a Foreign Language (TOEFL).

Applicants are asked to submit a statement describing past research experience and current research interests, and stating how completion of the Master in Science program fits into their career goals.

For International applicants; transcripts and all related material should be received no later than **February 28** to enroll in the fall semester of the same year.

For US applicants; transcripts and all related material should be received no later than **March 31** to enroll in the fall semester of the same year.

Financial assistance is not available. Students must show that they can support themselves.

Contact

For further information and application materials, contact:

Jannet Katz, DDS, PhD
 Professor
 Department of Pediatric Dentistry
 University of Alabama School of Dentistry
 BBRB 713
 1720 2nd Avenue South
 Birmingham, AL 35294-2170
 Telephone: (205) 934-2878
 FAX: (205) 934-1426
 e-mail: meow@uab.edu

DMD/PhD Program

Degree Offered:	DMD/PhD
Director:	Dr. Steve Filler
Phone:	(205) 934-3387
E-mail:	admissions@cs1.dental.uab.edu
Web site:	http://dental.uab.edu/students/prospective-students/dmd-phd-program.html

DMD/PhD Program

The UAB School of Dentistry DMD/PhD program prepares students for an exciting career in dental academics through an innovative integrated clinician scientist training program. Applicants interested in the DMD/PhD program must have completed an undergraduate degree program (BA or BS) that fulfills all requirements for both dental school and graduate school admissions.

Interested students need to contact Dr. Steve Filler, Director of Admissions, UAB-School of Dentistry at 205.934.3387 or by email at admissions@cs1.dental.uab.edu.

Important Points:

1. DMD and PhD degrees will be awarded within the same year upon completion of all dental and graduate school requirements.
2. Duration of the program is 8 years; however students with strong prior research experience have completed the program in 7 years.
3. Students accepted into the DMD/PhD program that do not complete the PhD training program, are required to reapply to the School of Dentistry for admission as a traditional DMD candidate.

To apply to the program, applicants must:

1. Contact Dr. Steve Filler at UAB School of Dentistry indicating intent to apply for the DMD/PhD program.
2. Submit a formal application to the UAB School of Dentistry through AADSAS as early as possible.
3. Submit an online application to the UAB Graduate School (<http://www.uab.edu/graduate/online-forms>) through one of the Biomedical

Sciences Interdisciplinary Themes, Engineering (Biomedical or Materials), Public Health, or other graduate program.

4. Have successfully taken the Dental Aptitude Test (DAT).
5. Have completed all the recommended courses for both dental and graduate school admissions.
6. Have prior hands-on-research experience.

Note: Separate applications are required to the UAB School of Dentistry and the UAB Graduate School (https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=uab-grad). UAB School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). Students should initiate AADSAS applications as early as possible.

Applicants under consideration will be requested to file a supplemental DMD/PhD application. Applicants qualified for admission will be invited for a personal interview with the Admissions Committee.

Candidates will be evaluated based on their academic record, DAT scores, research accomplishments, publications, commitment to a research dental academic career, character, and personality traits indicating potential for success in a DMD/PhD program.

Sequence of the DMD/PhD Program:

1. Students first enter the Graduate School and complete at least two years of coursework including graduate school qualification examinations and dissertation proposal defense maintaining at least a 3.0 GPA.
2. After research PhD candidacy with approval of the DMD/PhD Advisory Committee the student transitions into the DMD curriculum in lock step with a dental class from years 2-4.
3. DMD and PhD degrees are awarded within the same year upon completion of the degrees programs.

Financial Support Opportunities:

Students enrolled in the DMD/PhD training program are eligible for funding through the School of Dentistry's NIDCR supported T-90 Dental Academic Research Training (DART) Program or an individual NIDCR supported F-30 Training Award. See details about these programs at the following links: DART Program (<http://dental.uab.edu/research/training-programs/dart/dental-academic-research-training-program.html>) and the NIDCR F-30 grant application (<http://grants.nih.gov/grants/guide/pa-files/PAR-08-119.html>.)

Grad School of Education

General Information

UAB offers graduate programs that lead to teacher certification in a variety of K-12 teaching disciplines (Biology, Language Arts, Early Childhood Education, English as a Second Language, Kinesiology/Physical Education etc.), School Counseling, and Instructional Leadership and non-certification programs such as Community Health Education, Clinical Mental Health Counseling, and Kinesiology with an Exercise Science concentration. A complete listing and description of all graduate programs are described in the Department of Curriculum and Instruction and Department of Human Studies sections of the catalog. Most certification programs have both master's (MAEd) and a post-master's Education Specialist (Ed.S.) degree. Additionally, the School of Education offers doctoral programs in Early Childhood Education (PhD), Educational Leadership (EdD), and Health Education/Health Promotion (PhD).

All certification programs in the School of Education are fully approved by the National Council for Accreditation of Teacher Education (NCATE). All teacher certification programs within the School of Education have been approved by the Alabama State Board of Education (ALSDE). The School Counseling and Clinical Mental Health concentrations have also been accredited by the Council for Accreditation of Counseling & Related Educational Programs (CACREP). The Music program is accredited by the National Association of Schools of Music. The Art program has been accredited by the National Association of Schools of Art and Design.

Degrees and Certificates

Degrees are awarded by UAB in recognition of scholastic achievement and may be pursued for their own sake. However, employment in the public schools is governed not by the degree but by the professional certificate issued by the Alabama State Department of Education (ALSDE). Since many students in these programs are preparing for work in the public schools, the pursuit of a degree is usually coupled with pursuit of ALSDE certification. There is a rough correspondence between degree level and certification class, as follows:

Bachelor's|B| Master's|A| Specialist (post-master's)|AA|Doctoral|No Equivalent|

We emphasize that the admission and completion requirements for the degree and for the certificate are often significantly different. Furthermore, not all education students are pursuing teacher certification. Students seeking certification should verify requirements with an advisor or program director. Alabama State regulations governing certification change often; therefore, it is incumbent upon the student to seek advisement each term. Students should not register for any coursework without having first met with an advisor.

Interdisciplinary Programs

The PhD in Health Education / Health Promotion (p. 81) is a University of Alabama System degree jointly administered by three units: UAB School of Education, UAB School of Public Health, and UA College of Human Environmental Sciences. Students draw upon the expertise and resources of a diverse and highly qualified faculty. Graduates in the PhD program develop advanced training to become leading researchers,

clinicians and faculty in a variety of work settings such as universities, businesses, government agencies, and foundations. We strive to create a rigorous scholarly and supportive atmosphere for students to develop intellectually to acquire the knowledge, skills, and dispositions necessary to be highly competent and ethical health education professionals.

This program is designed to provide students with the coursework and practical experience to become leading researchers and practitioners in Health Education and Health Promotion. Course work includes a core of courses in advanced research and statistical methods, social and behavioral sciences, and the completion of a research internship and dissertation.

For more information regarding the Health Education/Health Promotion program, visit the Health Education/Health Promotion (p. 81) Graduate Catalog page.

Curriculum and Instruction

Chair:	Dr. Lynn Kirkland
Phone:	(205) 934-8358
E-mail:	lkirk@uab.edu
Web site:	http://www.uab.edu/education/ci/
Degree offered:	

Education, Early Childhood	Ph.D., Ed.S., M.A.Ed.
Education, Elementary	Ed.S., M.A.Ed.
Education, Secondary	Ed.S., M.A.Ed.
Art Education	M.A.Ed.
Music Education	M.A.Ed.
English as a Second Language	Ed.S., M.A.Ed.
Reading	M.A. Ed.
Special Education	Ed.S, M.A.Ed.
Teacher Leader	Ed.S.

Program Contact Information

Program Coordinator Contact Information (Room and Phone Number)

Secondary and Middle School Education: Dr. Susan Spezzini (spezzini@uab.edu) 100 (205) 934-8357

English as a Second Language: Dr. Susan Spezzini (spezzini@uab.edu) 100 (205) 934-8357

Arts Education: Dr. Susan Spezzini (spezzini@uab.edu) 100 (205) 934-8357

Teacher Leader: Dr. Susan Spezzini (spezzini@uab.edu) 100 (205) 934-8357

Special Education: Dr. Kay Emfinger (emfinger@uab.edu) 100 (205)934-7003

Early Childhood Education/Elementary Education: Dr. Kay Emfinger (emfinger@uab.edu)r 100 (205) 934-7003

Reading Education: Dr. Lynn Kirkland (lkirk@uab.edu) 100 (205) 934-8358

All Other Programs: Dr. Lynn Kirkland (lkirk@uab.edu) 100 (205) 934-8358

Graduate Programs

The M.A.Ed. and Ed.S. programs emphasize improving the teaching skills of the student and broadening the student's understanding of the field(s) of teaching specialization. Numerous teaching fields are available. All prospective students must apply for admission through the Graduate School.

The M.A.Ed. program requires a minimum of 30-32 semester hours of study, and the Ed.S. program requires at least an additional 30 semester hours. All programs require a written final examination or comprehensive electronic portfolio and a minimum GPA of 3.00 for master's degree and 3.25 for the Ed.S. An outline of the specific course requirements can be obtained from the following link: <http://www.uab.edu/education/student-services/general-information/checklists>. Admission requirements are located at the following link: <https://www.uab.edu/education/student-services/admission-requirements>.

The M.A.Ed. programs satisfy the academic requirements for the Alabama State Department of Education Class A Professional Certificate and a M.A.Ed. degree. The Ed.S. programs satisfy academic requirements for the Alabama State Department of Education Class AA Professional Certificate and an Ed.S. degree. See also the section "Education (General Information)" earlier in this catalog.

The program leading to the Doctor of Philosophy (Ph.D.) degree in early childhood education is sufficiently flexible to accommodate the interests and previous preparation of the student, but it must include an internship and a substantial research component culminating in the completion of a dissertation. The minimum admission requirements are those of the UAB Graduate School. However, admission is highly selective, and most successful applicants have qualifications much higher than the minimum. Admission is open with ongoing application considerations. Application packets must be complete in the Graduate School office before the applicant can be considered for the program.

Contact Information

For detailed information, contact Dr. Kay Emfinger (Early Childhood, Elementary, Special Education) or, Dr. Susan Spezzini (Secondary Education, Arts Education, Teacher Leader, and English as a Second Language), or Dr. Lynn Kirkland (Reading Education) UAB Department of Curriculum and Instruction, EB 100, 1720 2nd Avenue South, Birmingham, Alabama 35294-1250. Telephone 205-934-5371
Web www.ed.uab.edu/education/ci

Art Education

UAB's Art Education program is housed within the Department of Curriculum and Instruction. This program consists of a Master's of Arts degree in Art Education and also an alternative master's degree in Art Education. The first purpose of this Art Education program is to prepare educators in meeting the evolving needs of learners in grades P-12 within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in

their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. UAB's teacher education program is unique in how it combines online support from Blackboard with a variety of delivery formats:

- blended courses (online alternating with face-to-face evenings)
- flexible summer programming
- totally online platforms
- Saturday classes

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezzini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Early Childhood Education

UAB's Early Childhood Education program (M.A.Ed., Ed.S., Ph.D.) embodies a three-fold purpose. Its first purpose is to prepare educators in meeting the evolving needs of learners, primarily in grades P-6, within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Based on constructivism, this approach prepares prospective and experienced educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from the learning management system (i.e. Blackboard, Moodle, Edmodo) with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded through the Ed.S. program. This advanced degree program infuses an inquiry-focused approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills and mentoring techniques for serving as reflective practitioners to guide change and positively impact student achievement and school improvement. Teachers with Class A certification can pursue Ed.S.-level certification in elementary education or early childhood education. By then pursuing the Ph.D. program in early childhood education, they can then explore relevant issues, theories, and practice at an even higher level.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Elementary Education

UAB's Elementary Education program (M.A.Ed., Ed.S.) embodies a three-fold purpose. Its first purpose is to train educators in meeting

the evolving needs of learners, primarily in grades P-6, within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Based on constructivism, this approach prepares prospective and experienced educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from the learning management system (i.e. Blackboard, Moodle, Edmodo) with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded through the Ed.S. program. This advanced degree program infuses an inquiry-focused approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills and mentoring techniques for serving as reflective practitioners to guide change and positively impact student achievement and school improvement. Teachers with Class A certification can pursue EdS-level certification in elementary education.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

English as a Second Language

UAB's graduate degree program in ESL is comprised of a master of arts (M.A.Ed.) degree and an Educational Specialist (Ed.S.) degree. Both degrees prepare candidates to earn teacher certification in ESL from pre-school (P) through 12th grade. The M.A.Ed. also includes a non-certification track for teaching English as a Second Language to adult learners.

UAB's MAEd/ESL embodies a three-fold purpose. Its first purpose is to train educators in meeting the needs of the growing population of English learners (ELs), both children and adults, in Alabama and abroad. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Its third purpose is to ensure that a quality MAEd/ESL program is available to teachers throughout the state. Accessible to educators all over Alabama, this MAEd/ESL program is unique in how it combines online support from Blackboard with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- one-week summer teacher institutes
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded and enhanced by the EdS program. It infuses an inquiry-focused teacher leader approach that prepares

teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills to serve as reflective practitioners in guiding school change as well as with mentoring techniques to positively impact student achievement and school improvement.

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezzini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Music Education

UAB's Music Education program consists of a Master of Arts degree in Music Education and also an Alternative Master's degree in Music Education. The Music Education Program is housed in the Department of Curriculum and Instruction. This program's first purpose is to train educators in meeting the evolving needs of learners in grades P-12 within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. UAB's teacher education program is unique in how it combines online support from Blackboard with a variety of delivery formats:

- blended courses (online alternating with face-to-face evenings)
- flexible summer programming
- totally online platforms
- Saturday classes

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezzini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Reading

The Reading Education master's program (M.A.Ed.) prepares teachers to serve as reading specialists and to improve their classroom skills in teaching reading. Reading candidates will receive in-depth knowledge of reading pedagogy and implementation during their program. The reading candidates participate in extensive work with children/students in diverse groupings and settings. A portfolio of professional development in reading is completed by the end of the program.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Secondary Education

UAB's Secondary Education program prepares pre-service and in-service teachers for teaching in both Middle School and High School.

This secondary education program offers the following graduate degrees: Master of Arts in Education (MAEd) and Educational Specialist (Ed.S.).

UAB's Secondary Education program embodies a three-fold purpose. Its first purpose is to prepare educators in meeting the evolving needs of learners, primarily in grades 6-12, within today's rapidly changing society. Based on constructivism, its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from Blackboard with a variety of delivery formats:

- blended courses (online & face-to-face evenings)
- professional learning communities
- flexible summer programming
- totally online platforms
- Saturday classes

These purposes are expanded and enhanced by the Ed.S. program. This advanced degree offers standards-based concentrations within discipline areas. It infuses an inquiry-focused teacher leader approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills to serve as reflective practitioners in guiding school change as well as with mentoring techniques to positively impact student achievement and school improvement.

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Special Education

Welcome to UAB where students become skilled, reflective educators through Special Education graduate degree programs in Collaborative Teacher (CT) K-6, 6-12, Early Childhood Special Education (ECSE), and Visual Impairment (VI). These innovative program offer degrees and/or certification at three levels—alternative masters, traditional masters and specialist.

The alternative masters program (AMP) is for graduate students who do not already hold teacher certification in elementary or early childhood education. To be eligible for seeking initial teacher certification at a masters level, applicants must have an undergraduate degree with a 2.5+ GPA on their transcript from a regionally accredited college. They must have passed the Basic Skills test and the Praxis II exam in the targeted teaching field and also met other criteria stipulated by the ALSDE. Upon completing the AMP, candidates earn alternative Class A certification in this teaching field.

The traditional masters program (MAE) is for teachers who already hold Class B initial certification in any area of education. Upon completing the MAE, they earn Class A certification in the special education teaching field.

The Collaborative Teacher Autism Spectrum Disorders Educational Specialist (EdS) program is for teachers who already hold either an Alabama Class B or Class A certificate in any field of special education OR have at least 3 years of verified, full-time teaching experience with special populations and hold a valid Class A Professional Educator Certificate.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Teacher Leader

The Ed.S. program in Teacher Leadership provides teachers with an avenue for career enhancement and advancement. This program prepares teachers for serving as professional development facilitators, instructional coaches, lead teachers, department chairs, curriculum coordinators, and program area specialists.

Through the standards-based approach of UAB's Ed.S. Teacher Leader program, teachers learn state-of-the-art instructional strategies for meeting the evolving needs of diverse learners within today's rapidly changing society. They acquire collaborative skills to serve as reflective practitioners and dynamic leaders in guiding school change and effectiveness. They also learn mentoring techniques for positively impacting student achievement and school improvement.

At UAB, the Teacher Leader program was designed with an executive delivery model. As such, it is accessible to teachers who live at a distance from UAB and also to those who prefer to take courses in non-traditional delivery formats. Courses are delivered through blended instruction (face-to-face alternating with online) and totally online platforms as well as through professional learning communities. This 30-hour program contains six 5-hour modules. Each of these modules consists of a 3-hour content course, a 1-hour research course (R), and a 1-hour field experience course (L). Teachers concentrate on one academic focus per term by taking one module at a time. Moreover, by enrolling in 5 graduate credit hours per term, they are eligible for financial aid during each of the program's 6 semesters. The EdS Teacher Leader program has a rolling admission, and students can start any semester.

For additional information about the Ed.S. Teacher Leader program, please contact Dr. Susan Spezzini, Program Director, at spezini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Human Studies

Program Contact Information

Program	Coordinator	Room	Phone Number
Counselor Education	Dr. Larry Tyson	152	(205) 975-2491
Educational Leadership	Dr. Loucrecia Collins	223	(205) 975-1984
Health Education - MAEd	Dr. Retta Evans	259	(205) 996-2701

Health Education - PhD	Dr. Cynthia Petri	206	(205) 934-8342
Kinesiology (formerly Physical Education) - Teacher Certification	Dr. Sandra Sims	207	(205) 996-2721
Kinesiology (formerly Physical Education) - Exercise Physiology	Dr. Jane Roy	205	(205) 934-1757
Research	Dr. Melanie Shores	246	(205) 975-8487
Foundations	Dr. Andrew McKnight	222	(205) 934-6232

Educational Foundations

The Educational Foundations (EDF) Program examines how educational institutions shape and are shaped by the social and cultural structures within our society. Our mission is to offer a program that examines current teaching contexts and practice, research, and theory with the aim of increasing our professional candidates' knowledge and understanding of the socio-cultural, historical, political, and economic factors, as well as the philosophical underpinnings, that influence education and shape the societies and world in which we live. Within a diverse world, we also believe that professional educators should recognize a profound need to intentionally learn about and incorporate their students' personal experiences, cultures, and community resources into their instruction and programs. It is through our courses that students come to encounter, interrogate, better understand, and embrace the increasingly diverse landscape of our society and P-12 students.

Educational Psychology and Research

At the undergraduate level, The Educational, Psychology and Research Program (EPR) provides courses in Psychological Foundations and Measurement and Evaluation that are necessary for all prospective teachers to complete an undergraduate teaching degree. We also house the undergraduate Introduction to Statistics that serves the Health Education and Kinesiology programs and concentrations.

At the graduate level, we provide Educational Psychology courses that meet the program requirements for graduate teacher certification programs as well as courses taken for recertification and electives for other programs. We also house the research and statistics courses that are requirements for the three doctoral programs within the School of Education. These courses also attract graduate students from schools outside the School of Education such as Nursing, Public Health, and the School of Health Professions, to mention a few. Additionally, we serve numerous Masters and Educational Specialists degree programs with courses needed to complete these degrees as well.

Counselor Education

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions

Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Overview

The program in Counselor Education at the University of Alabama at Birmingham prepares Clinical Mental Health and School counselors at the Master's level. At the master's level, students acquire core knowledge and clinical skills, which enable them to enter the profession of counseling.

All counseling concentrations (Clinical Mental Health and School) are designed to meet the course-work and field experiences requirements for professional licensure in the State of Alabama. The School Concentration is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). The School Counseling Concentration meets the course work and field experiences required by the Alabama State Department of Education for certification.

The Counselor Education program at the University of Alabama at Birmingham is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). The accreditation is through January 15, 2018. The Clinical Mental Health Counseling concentration, a 61 hour program, is currently accredited under the 2001 standards for Community Counseling programs as a Community Counseling program. The CACREP 2009 standards combine the Community Counseling and Mental Health Counseling standards into standards for Clinical Mental Health Counseling programs. The counseling program intends to seek accreditation for this program as a Clinical Mental Health Counseling program when it comes up for reaccreditation, per CACREP guidelines.

Admission Process

Consideration for admission to graduate study in counseling will occur each term. The completed application packet must be received by the [Counselor Education Program](#) from the Graduate School by the dates shown:

Entry Term	Deadline
Fall	June 1
Spring	October 1
Summer	April 1

Admission to graduate study in counseling is initiated through the Graduate School and all required materials are to be submitted per specified instructions delineated by the Graduate School.

Each applicant seeking admission to a counseling program concentration must include with the other required materials, a typewritten statement of professional purpose that reflects the applicant's background, development, pertinent work-related experience, professional career objectives and specified ways that completion of this program will contribute to his/her goal for becoming a professional counselor.

Standardized Test Scores and GPA Requirements

GPA 2.75 or better

GRE 850 (combined score of verbal and quantitative) or,

MAT 388

The application packet is reviewed by the Counselor Education faculty. Applicants deemed to have acceptable scores, strong references,

appropriate statement of purposes, and grades will be invited for an interview that will include a group experience and a writing sample with the Counselor Education faculty. Applicants should not infer they have been admitted into the program if granted an admissions interview. Selection will be made by the Counselor Education faculty after reviewing the applicant's credentials in their entirety, and some candidates meeting minimum requirements may not be admitted. Candidates participating in the interview may be given one of two decisions: a) admit, b) denied. Students are notified of their admission status following the interview.

Non-Degree Seeking Students

Potential students may take classes prior to admission to the Counselor Education Program as "non-degree seeking" students. However, non-degree seeking students are limited to 12 hours of coursework that may be transferred into the Counselor Education Program. Non-degree seeking students may enroll in elective courses with the permission of the instructor. It would be important for non-degree seeking students to make an advising appointment with a Counselor Education faculty member prior to enrolling in Area II courses as choices made could impact on future clinical placements. Non-degree seeking students are not permitted to take Area I counseling courses without permission of the instructor. It is also important to note that students taking coursework as a non-degree seeking student do so at their own risk. Enrolling and passing non-degree seeking coursework does not guarantee admission into the program as admission criteria (e.g., test scores, undergraduate GPA, and interview) are the primary factors considered when reviewing student suitability for the program

Program Outcomes

Students in the program are required to meet specific outcomes for the program. These outcomes involve knowledge, skills, and abilities. Outcomes are met when students pass critical "high stakes" assessments in the program. Failure to achieve the required outcomes will result in termination from the program.

Evaluation of Candidates

There are 7 Checkpoints in the assessment system for counseling candidates: Admissions, Course-based Assessments, Comprehensive Exams, Practicum, Internship, and Eligibility for Graduation/Certification. Evaluation of the counselor-in-training is an on-going process. The faculty reserves the right to assess the candidate's appropriateness to be a professional counselor.

Dispositions

Counselor Education faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education's policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Clinical Experience: Master's Level

Upon admission, within the first semester of study, students in the school counseling concentration must submit to fingerprinting and a Background Review conducted by the Alabama State Department of Education at the student's cost. For information on the cost and how to complete this requirement, go to <http://background.alabama.gov/>. No school counseling student shall begin a clinical placement (Practicum or Internship in an education

environment) in Alabama without a suitability letter from the Alabama State Department of Education demonstrating that the student's criminal background has been reviewed and cleared by the Department of Education. Clinical Mental Health counseling students are not required to submit to fingerprinting or a background review upon admission to the Counselor Education Program. However, Clinical Mental Health counseling students are required to complete clinical placements in order to obtain the master's degree in counseling and many of the outside agencies/entities require fingerprinting and background reviews prior to accepting a student for clinical placement. For all counseling students, the appearance of one or more felonies and/or several misdemeanors on a student's background review may negatively impact placement potential and/or credential obtainment.

Prerequisites for the clinical experience include successful completion of required coursework, meeting the required outcomes and competencies in Areas I and II, and successful completion of comprehensive exams. The practicum experience requires a minimum of 100 hours (including **40 hours of direct client contact**) on-site at an appropriate setting to be determined by the Clinical Coordinator. The internship is 600 hours (including **240 hours of direct client contact**) on-site. Grading for the clinical experiences is on a Pass/Fail basis. To receive a Pass grade the counselor-in-training must be able to demonstrate basic counseling skills, behave in an appropriate professional manner consistent with the American Counseling Association's Code of Ethics, and satisfactorily complete the academic, dispositional and outcome requirements set forth in both the practicum and internship classes. If a student fails to pass any part of the clinical experience, he or she will not be allowed to continue in the program. Taking the clinical experience over will **not** be an option.

Concentrations: Master's Level Clinical Mental Health Counseling

The Master of Arts in Counseling with a concentration in Clinical Mental Health counseling is designed to prepare students to demonstrate knowledge and skills with several counseling modalities appropriate for a broad range of clients in a multicultural society; interact effectively with other helping professionals and referral resources; make appropriate counselor-client related decisions in the context of professional, ethical, and legal guidelines; and fill effectively entry-level positions of professional responsibility within the specialization of agency counseling. The coursework is approved by the Alabama Board of Examiners in Counseling, which allows graduates of the program to pursue licensure as professional counselors in the state of Alabama. This program takes no less than 3 years to complete. For most students, it takes approximately 3.5 years or 10 terms (including summers) to complete the program.

COURSE OF STUDY

(61 Semester Hours)

Area I:

Requirements		Hours
EPR 590	Research & Prgm Eval in Coun	4
ECG 612	Professional Orientation	3
EPR 614	Lifespan Human Development	3
ECG 621	Theories of Individual Counseling	3
ECG 624	Assessment (Prerequisites: EPR 590)	3
ECG 626	Group Counseling: Process and Procedures (Prerequisites: ECG 624 & ECG 638)	3

ECG 628	Social and Cultural Diversity	3
ECG 630	Career Development: Vocational and Life Planning	3
ECG 638	Practicum I: Clinical Skills and Techniques (Prerequisite: ECG 621)	3
Total Hours		28

Comprehensive Exam

The Counselor Preparation Comprehensive Exam will be given upon completion of Area I. This is a "high stakes" assessment. Students who do not successfully pass this examination will be given the opportunity to re-take the exam a maximum of two times. There are no exceptions. Students unsuccessful in passing the comprehensive exam will be dismissed from the program.

AREA II:

Requirements	Hours
ECG 600 Intro to Community Counseling	3
ECG 650 Diagnosis and Treatment of Psychological Disorders	3
Elective (discontinued, fall, 2012)	
Elective (discontinued, fall, 2012)	
ECG 631 Suicide Prevention (Required, Fall, 2012)	3
ECG 651 Human Sexuality for Counselors (Required, Fall, 2012)	3
ECG 613 Foundations of Substance Abuse (required, Fall, 2012)	3
ECG 652 Advanced Counseling Techniques (Required, Fall, 2012)	3
ECG 653 Counseling Children and Adolescents (Required, Fall, 2012)	3
ECG 691 Seminar: Special Topics in the Helping Profession (Required, Fall, 2012)	3
Total Hours	24

AREA III: Clinical Requirements

Requirements	Hours
ECG 695 Practicum II: Supervised Field Experience (prerequisites: Areas I & II, Comprehensive Exams, and recommendation of the faculty)	3
Practicum is 100 hours minimum with 40 hours of direct client contact	
ECG 697 Counseling Internship (6 hours-2 semesters) (Prerequisite: ECG 695)	6
Internship is 600 hours with 240 hours of direct client contact	
Total Hours	9

School Counseling

According to the American School Counseling Association, "the purpose of a counseling program in a school setting is to promote and enhance the learning process." The goal is to enable all students to achieve success in school and to develop into contributing member of our society.

The concentration in School counseling is designed to prepare individuals as counselors in grades K-12. The program leading to the Master of Arts in Counseling degree requires a minimum of 49 semester hours of prescribed coursework to meet the academic and field experience requirements for the SDE Class A Professional Certificate in school counseling.

Admissions: In addition to the admission requirements for the Counselor Education Program, candidates seeking admission to the school counseling concentration must possess a minimum of a 2.75

undergraduate grade point average. Before the school counseling student can receive certification, the school counseling student must satisfactorily obtain a passing score on the following assessments: Alabama Educator Certificate Test, the Praxis II Test in School Counseling, the National Counselor Exam.

The school counseling concentration meets the course work and field experiences required by the Alabama State Department of Education for certification. The concentrations meet the academic and field experience requirements for licensure as professional counselors in Alabama.

COURSE OF STUDY

(49 Semester hours)

Area I

Requirements	Hours
EPR 590 Research & Prgm Eval in Coun	4
ECG 612 Professional Orientation	3
ECG 621 Theories of Individual Counseling	3
EPR 614 Lifespan Human Development	3
ECG 624 Assessment	3
ECG 626 Group Counseling: Process and Procedures	3
ECG 628 Social and Cultural Diversity	3
ECG 630 Career Development: Vocational and Life Planning	3
ECG 638 Practicum I: Clinical Skills and Techniques	3
Total Hours	28

Comprehensive Exam

A National Comprehensive Examination will be given upon completion of Area I. This is a "high stakes" assessment. Students who do not successfully pass this examination will be given the opportunity to re-take the exam a maximum of two times. There are no exceptions. Students unsuccessful in passing the comprehensive exam will be dismissed from the program.

AREA II

Requirements	Hours
ECG 620 Foundations of School Counseling	3
ECG 623 Comprehensive Counseling and Guidance: M/H School	3
ECG 627 Comprehensive Counseling and Guidance: M/H School	3
Elective (discontinued, fall, 2012)	
ECG 619 Special Issues for School Counselors	3
Total Hours	12

AREA III: Clinical Requirements

Requirements	Hours
ECG 695 Practicum II: Supervised Field Experience (Prerequisites: Areas I & II, Comprehensive Exams, and recommendation of faculty)	3
Practicum 100 hours; 40 direct hours.	
ECG 697 Counseling Internship (Prerequisite: ECG 695)	6
Internship 600 hours; 240 direct hours	
Total Hours	9

Educational Leadership

Because admission to these programs is selective, prospective students should contact a departmental advisor to determine specific admission requirements for the degree or certificate in which they are interested. For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

The following degrees are offered: MAE in Instructional Leadership (leading to Alabama Class A Certification in Instructional Leadership); the Educational Specialist Degree (leading to Alabama Class AA Certification in Instructional Leadership – must have Class A in Instructional Leadership first); the Doctorate of Education degree (Ed.D.) in Educational Leadership (must have Ed.S. in Educational or Instructional Leadership to apply).

The programs leading to the Doctorate of Education (Ed.D.) degree in educational leadership are offered at UAB by the joint faculties of UAB and the University of Alabama (Tuscaloosa). Admission is highly selective and is open every other year. In addition to the Graduate School requirements, a portfolio and writing sample are required by the program.

Additional Information

For detailed information, contact Dr. Loucrecia Collins, Program Director, Educational Leadership, Department of Human Studies, UAB School of Education, 1720 2nd Avenue South, EB 223, Birmingham, AL 35294-1250.

Telephone: 205-975-1984

E-mail: lcollins@uab.edu

Web: <http://www.uab.edu/education/humanstudies/educational-leadership/program-admission>

Dispositions

Educational Leadership faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education's policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Health Education

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Overview of Our Programs

The Health Education program at the UAB is designed to prepare students to work in various professional health settings including national/state health agencies, clinical-based programs and community agencies. In addition to studying contemporary health content, students learn the process of assessing, planning, implementing, and evaluating health-related programs and interventions. Students are provided numerous opportunities to practice classroom skills in the community through service learning imbedded throughout the curriculum.

Master of Arts in Education: Community Health

The Health Education program at the UAB prepares students for advanced employment opportunities beyond the bachelor's degree level (MAE in Community Health). Work settings include public, volunteer, and private health agencies, clinics, and worksites. Students use skills in health education program planning, implementation, and evaluation. Students are also provided numerous opportunities to practice classroom skills in the community through service learning. Students learn research protocol and have opportunities to complete either a thesis or take comprehensive exams. Required courses include research design, foundations of health education, planning and evaluating programs, administration, and health behavior theory. Course work is aligned with the responsibilities and competencies of advanced level health educators developed by the National Commission for Health Education Credentialing www.nchec.org. This program of study has been developed to include the knowledge and skill competencies needed to be eligible and prepared to sit for the Certified Health Education Specialist (CHES) exam.

M.A.Ed. Admission Process

Consideration for admission to the master's degree program will occur each Fall and Spring term. The completed application packet must be received by the Health Education Program from the Graduate School by the dates shown:

Entry Term	Deadline
Fall	April 30
Spring	October 30

Admission to graduate study in health education is initiated through the Graduate School and all required materials are to be submitted per specified instructions delineated by the Graduate School. M.A.Ed. applicants should have a cumulative GPA of 2.50/4.00 or greater for prior college coursework and preferred MAT score of 399 or greater, or preferred GRE scores of 150 or greater for Verbal Reasoning and 149 or greater for Quantitative Reasoning. In rare cases, applicants who do not meet these standards may be considered for admission if the faculty determines the candidate brings something unique to the learning community.

In addition, applicants must include a typewritten statement of professional purpose that reflects the applicant's background, development, pertinent work-related experience, professional career objectives and specified ways that completion of this program will contribute to his/her goal for becoming a health education professional.

All applications for graduate admission are reviewed by the health education faculty. Applicants deemed to meet requirements will be contacted for an interview with the Admissions Committee. Applicants should not infer they have been admitted into the program if granted an admissions interview. Selection will be made by the faculty after reviewing the applicant's credentials in their entirety, and some candidates meeting minimum requirements may not be admitted. Candidates participating in the interview may be given one of two decisions: a) admit, or b) not admit. Students are notified of their admission status following the interview.

Programs of Study for Master's Degrees

(Program Coordinator, Dr. Retta Evans, rrevans@uab.edu)

The M.A.Ed. in Community Health is designed to prepare individuals for advanced health education careers in agency, schools, worksites, and allied health care settings. This program is aligned with the National Commission for Health Education Credentialing and prepares students to sit for the CHES/MCHES certification. CHES/MCHES provides evidence of competency of the knowledge, skills and application of the Areas of Responsibilities defining the role of an entry or masters-level health educator. Program options allow students to select thesis, or non-thesis as options. In addition, a Graduate Traineeship in Pediatric Pulmonary Care (PPC) is offered to one student and is designed specifically for professionals desiring a graduate degree in Health Education, who are interested in pediatric pulmonary care, and aspiring to positions of leadership. IF interested in the PPC program, contact Dr Wajih Ahmad, wahmad@uab.edu.

M.A.Ed. – Community Health, Thesis Option

Thesis required (33 hours course work required)

NOTE: No individual course grade below “C” will be accepted. Each course with a grade below “C” must be repeated.

Requirements		Hours
Major Courses		
HE 610	Foundations of Health Education (pre or co requisites HE 223, HE 343 or equivalent coursework)	3
HE 606	Issues in Disease Control (pre or co requisites HE 223, HE 343 or equivalent coursework)	3
HE 631	Planning and Implementing Health Education (Prerequisite: HE 610)	3
HE 632	Admin Health/Fit Programs (Prerequisite: HE 610)	3
HE 642	Health Behavior and Health Education (Prerequisite: HE 610)	3
HE 689	Methods and Materials for Planning Health Ed Prog (Prerequisite: HE 610)	3
HE 697	Evaluation of Health Education Programs (Prerequisite: HE 610)	3
Additional Requirements		
Students must have these courses or equivalents, or take them with HE 610:		
HE 223	Introduction to Epidemiology and Disease Impact	
HE 343	Theory and Determ of Health Behavior	
Research Courses		
EPR 609	Statistical Methods and Research in Education: Intermediate (Prerequisite: EPR 608)	3
EPR 692	Introduction to Educational Research Design	3
Thesis		
Graduate Elective (MUST be approved by a health education advisor)		3
Total Hours		33

M.A.Ed. – Community Health, Non-Thesis Option

(33 hours course work required.)

NOTE: No individual course grade below “C” will be accepted. Each course with a grade below “C” must be repeated.

Requirements		Hours
Major Courses		
HE 610	Foundations of Health Education ((pre or co requisites HE 223, HE 343 or equivalent courses)	3

HE 606	Issues in Disease Control (Prerequisite: EPR 607/608 or equivalent course)	3
HE 631	Planning and Implementing Health Education (Prerequisite: HE 610)	3
HE 632	Admin Health/Fit Programs (Prerequisite: HE 610)	3
HE 642	Health Behavior and Health Education (Prerequisite: HE 610)	3
HE 689	Methods and Materials for Planning Health Ed Prog (Prerequisite: HE 610)	3
HE 697	Evaluation of Health Education Programs (Prerequisite: HE 610)	3
Additional Requirements		
Students must have these courses or their equivalents, or take them with HE 610:		
HE 223	Introduction to Epidemiology and Disease Impact	
HE 343	Theory and Determ of Health Behavior	
Research Courses		
EPR 609	Statistical Methods and Research in Education: Intermediate (Prerequisite: EPR 608)	3
EPR 692	Introduction to Educational Research Design	3
Graduate Elective (Must be approved by a health education advisor).		
HE 693	Advanced Field Experience in Health Education	3
Total Hours		33

Comprehensive Examination Non-Thesis Option Only

Students in the Non-Thesis M.A.Ed. program must complete a supervised internship including comprehensive exams during their last semester of course work. The examination process is intended to allow students to demonstrate the appropriate aptitude for advanced level health education. The process encompasses the content knowledge and critical thinking skills that Health Education faculty believes every student graduating from this program should possess. A student cannot attempt the internship and comprehensive exam more than twice. Those who cannot complete the internship and exam with a passing score during the second attempt will be dismissed from the program and not allowed readmission. Contact your health education academic advisor for further information.

Graduate Traineeship in Pediatric Pulmonary Care (with School of Health Professions)

The traineeship features a combination of planned coursework, hospital rounds, pulmonary clinics, patient and family education and research experience and is designed specifically for professionals desiring a graduate degree in Health Education (master’s or doctorate), who are interested in pediatric pulmonary care, and aspiring to positions of leadership. This 12-month interdisciplinary training program is offered to graduate students in Respiratory Therapy - Health Education, nursing, nutrition, social work and medicine. Training is provided in each of the Maternal and Child Health Leadership Competencies. The Traineeship includes a monthly stipend (for up to 12 months) and tuition assistance (limited to U.S. citizens or to individuals with a permanent visa). For further information, contact Heather Hathorne, Pediatric Pulmonary Center Faculty Respiratory Therapist, 205-638-9568.

Student Professional Dispositions

Health Education faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education’s policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Graduate Program Policies

No individual course grade below “C” will be accepted. Each course with an earned grade below “C” must be repeated. Repeating a required health education course more than twice is not permitted. If a student receives a grade lower than a “C” after their second attempt, he or she will be dismissed from the Health Education program and not allowed readmission.

Non-Degree Seeking Graduate Students

Following admission to the UAB Graduate School, students may enroll in elective Health Education courses as “non-degree seeking” students with the permission of the instructor. Non-degree seeking students are limited to 12 hours of coursework. It is essential for non-degree seeking students to make an advising appointment with a faculty member prior to enrolling in elective courses as some elective courses have pre-/co-requisites. Non-degree seeking students are not permitted to take “core” health education courses prior to admission. Enrolling and passing non-degree seeking coursework does not guarantee admission into a masters or doctoral degree program. Admission criteria (e.g., test scores, cumulative GPA, recommendations, and interview) are the primary factors considered when reviewing student suitability for admission to a program.

Health Education/Health Promotion

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Health Education/Health Promotion (PhD)

Graduate Program Director (Education): Dr. Cynthia J. Petri, cpetri@uab.edu

Ph.D. Health Education/Health Promotion

The PhD in Health Education/Health Promotion is a UA System degree jointly administered by three units: UAB School of Education and College of Arts & Sciences, UAB School of Public Health, and UA College of Human Environmental Sciences. Students draw upon the expertise and resources of a diverse and highly qualified faculty. Faculty members strive to create a rigorous scholarly and supportive atmosphere for students to develop intellectually with the knowledge, skills and attitudes necessary to be ethical and responsible health education professionals.

Ph.D. Admission Process

Consideration for admission to graduate study in health education will occur each Fall and Spring term. The completed application packet must

be received by the [Health Education Program](#) from the Graduate School by the dates shown:

Entry Term	Deadline
Fall	April 30
Spring	October 30

Candidates for admission must have completed a bachelor’s or master’s degree from an accredited institution in health education or a health-related field. Admission to doctoral study is initiated through the Graduate School. Applicants will: (a) request official transcripts of all college coursework to send to UAB Graduate School; (b) submit (3) letters of recommendation from professors or others who are qualified to judge your ability to complete doctoral coursework; (c) complete the GRE indicating UAB as the recipient of your scores; and (d) submit writing sample(s), such as an essay describing your academic training, professional experiences and career goals, or scholarly papers presented during professional meetings. Admission to the program is competitive.

Ph.D. applicants should have a cumulative GPA of 3.00/4.00 or greater for prior college coursework and preferred GRE scores of 156 or greater for Verbal Reasoning and 156 or greater for Quantitative Reasoning.

Faculty consider GRE scores as one indicator of an applicant’s potential success in the doctoral program.

Ph.D. Health Education/Health Promotion Program of Study

Students may enter the program with either a bachelor’s or master’s degree in health education, or a master’s degree in a closely related health field. Prerequisite coursework includes Foundations of Health Education, Administration of Health Education, Health Education Planning and Evaluation, Health Education Methods, Materials and Delivery, and Research Design and Statistics. These requirements may be corequisite components in the program.

Students entering the program with a master’s degree may transfer appropriate coursework to this program; however, this will not reduce the number of courses required. Students will not be required to retake coursework already completed but may be required to complete prerequisites as part of their planned course of study.

A required review of student credentials prior to admission will identify strengths and needs. This review will provide students with a blueprint for their course of study and will be conducted by the program director and faculty advisor.

The PhD degree program will require students to complete a minimum of 72 credit hours: 36 hours of coursework, 12 hours of research internship, and 24 hours of dissertation research. Students will meet regularly with a faculty advisor to plan course enrollment.

The specific components of the PhD program in health Education and Health Promotion are outlined below.

Ph.D. through the School of Education

(UA = HHE, UAB-Public Health = HB, UAB-Education = HE)

Requirements	Hours
I. Health Education and Promotion Courses	
A. Advanced Theoretical and Scientific Bases of Health Education and Health Promotion (HHE 605, HB 750, HE 705)	3
B. Health Communications Research (HHE 607, HB 730, HE 701)	3

C. Planning and Administration of Health and Health Promotion (HHE 606, HB 760, HE 710)	3
D. Doctoral Studies Seminars (HHE 604, HB 770, HE 700) taught during 3 consecutive terms, 1.0 hr each Seminar	3
II. Advanced Research and Statistical Methods	
A. Multivariate/Multiple Regression Analysis	3
B. Advanced Epidemiological Research Methods	3
C. Data Management/Computer Technology	3
D. Evaluation/Research Methods	3
III. Coursework in the Social and Behavioral Sciences Minor	
Selection of courses pre-approved by doctoral program advisor to build knowledge and skills in a cognate area, e.g. Health Disparities Research, Global Health, Public Health Policy, Aging and Health, Disabilities and Health	12
IV. Research Internship	12
V. Dissertation	24
Total Hours	72

Comprehensive Examination

A written comprehensive examination is required of all candidates for the Ph.D. degree. Your preparation will include studying course content, core competencies for the profession, and related literature of the discipline. Prior to taking the exam, students must have completed their core course requirements, and at least 75% of their other course work. Students must register for a minimum of 3.0 hours of graduate work during the semester(s) in which the comprehensive exam is taken.

The Comprehensive exam will be offered twice each year and is written and graded by the graduate faculty in the joint doctoral program. The examination will be a synthesis of the core coursework as well as core competencies in the field of Health Education and Health promotion. Grading of the comprehensive exam is done blinded, and by consensus. Students who fail to achieve passing scores will have one attempt to remediate within a calendar year. If a student fails a section for the second time, they will be dismissed from the program.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Kinesiology

Degrees offered include the Master of Arts in Education and the Educational Specialist. At the master's degree level, students may specialize in Exercise Physiology (see listing below for more information about this program) or complete a teacher certification program. (traditional master's program for those holding a valid B level certificate in physical education or the alternative master's program for those NOT completing an undergraduate physical education teacher education program). The teacher certification program links teacher certification with the graduate program in physical education. For example, the M.A. Ed. awards the level A certificate and the Ed.S. is linked to the AA certificate. Each program requires a teaching certificate in physical education at the previous level (e.g., B certificate for admission to the A level, except the Alternative A program, and the A certificate for admission to the AA certificate).

Dispositions

Physical Education faculty individually review the professional dispositions (behaviors and attitudes) of students within each course

in accordance with the School of Education's policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Master of Arts in Education and "A" level teaching certificate; Non-Thesis

(31- 34 hours)

Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

Requirements	Hours
KIN 697 Advanced Field Experience in Kinesiology	3
KIN 647 Teaching Strategies and Issues in K-12 PE	3
KIN 643 Curriculum Development in Physical Education	3
600 Level Electives as approved by advisor (KIN 645 and KIN 649 are recommended)	6
Total Hours	15

Additional Courses: (13-16 hours)

Requirements	Hours
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)	
ECY 600 Introduction to Exceptional Learner	3
EPR 608 Statistical Methods and Action Research	3
EPR 607 Microcomputer Applications to Statistical Analysis	1
EDF or EPR 600 level course	3
Elective (as approved by advisor)	9
Total Hours	19

Master of Arts in Education and "A" level teaching certificate; Thesis

(30-33 hours)

Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

Requirements	Hours
KIN 697 Advanced Field Experience in Kinesiology	3
KIN 647 Teaching Strategies and Issues in K-12 PE	3
KIN 643 Curriculum Development in Physical Education	3
KIN 699 Thesis Research	6
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)	
ECY 600 Introduction to Exceptional Learner	3
Total Hours	18

Additional Courses: (13 hours)

Requirements	Hours
EDF or EPR 600 level course	3
EPR 609 Statistical Methods and Research in Education: Intermediate	3
EPR 692 Introduction to Educational Research Design	3
Elective (as approved by advisor)	6
Total Hours	15

Alternative A (Non-Traditional 5th-Year Physical Education program) Non-Thesis

(4-47 hours)

Additional requirements are 28 hours of prescribed coursework. Contact the Office of Student Services in Suite 232 of the Education Building for specific courses required.

Requirements	Hours
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)	
ECY 600 Introduction to Exceptional Learner Curriculum and Teaching:	3
KIN 643 Curriculum Development in Physical Education	3
Professional Studies:	
EDF or EPR 500 - 600 level course (Advisor Approval Required)	3
EDU 500 Education as a Profession	1
Evaluation of Teaching and Learning:	
EPR 608 Statistical Methods and Action Research	3
EPR 607 Microcomputer Applications to Statistical Analysis	1
Reading:	
EDR 551 Reading in Content Areas	3
Internship:	
KIN 696 Elementary/Secondary Physical Education Internship	9
Teaching Field:	
At least 1/3 of the program shall be teaching field courses (12)	
KIN 645 Advanced Motor Development	3
KIN 647 Teaching Strategies and Issues in K-12 PE	3
KIN 649 Adapted Physical Education	3
KIN 607 Principles of Coaching	3
KIN 509 Assessment in Physical Education	3
KIN 589 Physical Education Instructional Strategies	3
Total Hours	44

Ed.S. Degree

(30-33 hours)

Requirements	Hours
Teaching Field:	
At least 1/3 of the program shall be teaching field courses (12)	
KIN 636 Current Readings in Physical Education	3
KIN 715 Advanced Field Experience in Physical Education	3
KIN 726 Supervised Research in Physical Education	3
Survey of Special Education Coursework: Required if not previously completed. (0-3 hours)	
ECY 600 Introduction to Exceptional Learner	3
KIN 729 Physical Education Seminar	3
Additional Courses:	
EPR 692 Introduction to Educational Research Design	3
EPR 609 Statistical Methods and Research in Education: Intermediate	3
Electives with Permission of Advisor	12
600- or 700-level Professional Studies or Teaching Field courses	
Total Hours	33

Exercise Physiology

The Exercise Physiology specialization offers a master's degree option for students interested in either clinical exercise physiology or physiology research. The curriculum is multidisciplinary and comprises courses in the Schools of Education, Medicine, Health Related Professions, and Public Health. Two program plans are offered (detailed below). Plan I culminates with a thesis research project, and Plan II culminates with a written comprehensive exam. Resources for student participation in research include a Muscle Research Laboratory, a Strength Performance Laboratory, and a Body Composition/Energy Metabolism Laboratory. Wide arrays of field experiences are also available in local agencies and clinics. In addition to Graduate School admission requirements, prospective students must have completed undergraduate coursework in physiology, anatomy, and chemistry. First-year students begin in the fall term. Listed below are the courses required in the program and a sample of elective courses.

M.A.Ed. Program

Admission Requirement and Prerequisites

In addition to the general admission requirements of the Graduate School, the following prerequisites apply to these programs. The prerequisites are not part of the graduate program. Applicants without the prerequisites may be admitted conditionally and take up to 12 semester hours of graduate work while completing the prerequisites. Specific course prerequisites are determined on an individual program basis by the student's advisors.

Plan I - 27 hours and Thesis

Required Courses (12-15)

Requirements	Hours
KIN 637 Physiology of Exercise I	3
KIN 638 Physiology of Exercise II	3
EPR 692 Introduction to Educational Research Design	3
KIN 642 Practicum in Physiology	3
EPR 609 Statistical Methods and Research in Education: Intermediate	3
Thesis	6
Related Field	9
Total Hours	30

Plan II

(36 hours of coursework)

Major Courses (12-15 hours)

Requirements	Hours
KIN 637 Physiology of Exercise I	3
KIN 638 Physiology of Exercise II	3
EPR 692 Introduction to Educational Research Design	3
EPR 609 Statistical Methods and Research in Education: Intermediate	3
Elective in Major	3
Thesis Substitution	12
Related Field	6-9
Total Hours	33-36

Sample Major Electives for Plan I and II

Requirements		Hours
KIN 656	Advanced Sport Psychology	3
KIN 640	Advanced Techniques in Conditioning the Athlete	3
KIN 639	Exercise Prescription for High Risk Populations	3
KIN 672	Advanced Treatment of Athletic Training	3
KIN 674	Advanced Sports Nutrition	3
KIN 645	Advanced Motor Development	3
KIN 695	Problems in Physical Education	3-6
KIN 630	Mechanical Analysis of Motor Skills	3
KIN 585	Advanced Exercise Testing and Prescription	3

Sample Courses for Related Fields, Plan I and II

Requirements		Hours
NTR 601	Advanced Medical Nutrition	3
NTR 618	Nutritional Biochemistry	6
NTR 650	Body Composition and Energy Metabolism	3
EPI 602	Epidemiology of Chronic Diseases	4
GER 540	Biology of Aging	3
HE 502	Mental Health and Stress Management	3
HE 532	Administration of Health and Fitness Programs	3

Grad School of Engineering

Dean: Dr. J. Iwan Alexander

The School of Engineering is comprised of five departments: Biomedical Engineering; Civil, Construction, and Environmental Engineering; Electrical and Computer Engineering; Materials Science and Engineering; and Mechanical Engineering. The School offers 6 programs leading to a master's degree and 4 programs leading to a doctoral degree.

Engineering at UAB is about the brightest, most talented researchers in their fields bringing new basic science discoveries and new applied technologies to fruition. Engineering at UAB is about smart, driven students from across the city, state, and world learning together and taking advantage of a multitude of opportunities for real-world educational experiences. Engineering at UAB is about collaboration: projects that are bringing engineers together with medical professionals, business leaders, and fellow scientists from other disciplines, in order to push the envelope and discover new, innovative solutions for the challenges our world faces. The School of Engineering seeks to provide students with the opportunities you need to meet your goals.

Interdisciplinary Programs

The School of Engineering offers an Interdisciplinary Engineering PhD program with concentrations in Computational Engineering and Environmental Health & Safety Engineering. Additionally, the Departments of Mechanical Engineering and Art & Art History bring their collective expertise and experience together to offer a new interdisciplinary Category A certificate program involving an integrated art and engineering curriculum. The Leonardo Art & Engineering Graduate Certificate program provides cross-disciplinary training in simulation, art, visualization, and virtual reality (VR) to students with a BS/BA degree in Arts and Sciences, Engineering, Business, or Healthcare-related disciplines for addressing marketing, education/training, entertainment, product development, and design application demand of the 21st century growth area in 3D and VR technologies.

Interdisciplinary Engineering (Ph.D)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Concentrations offered: Computational Engineering, Environmental Health & Safety Engineering

Faculty: Because of the interdisciplinary nature of this program, participating faculty come from various areas of engineering and science. A complete listing of all participating faculty can be found at <http://www.uab.edu/engineering/home/degrees-cert/197-degree-certificates/765-graduate-faculty>.

Program Objectives

For more than a decade, research-focused centers at UAB and elsewhere have brought together expertise from many disciplines to solve problems. This same problem-solving approach is now finding its way into academic programs through the implementation of interdisciplinary

graduate education. It is the premise of these interdisciplinary programs that students must be educated in more than one area to remain competitive and have successful careers whether they choose to stay in academia or work in industry. Industries are particularly interested in graduate education that emphasizes breadth of knowledge as well as depth in a particular field. Today's professional must be able to change, focus, and move between disciplines in order to keep up with rapid market shifts and technological advances.

The Ph.D. program in Interdisciplinary Engineering takes advantage of unique resources and strengths at UAB. This program fosters interdisciplinary interactions between the School of Engineering and medical and biomedical units and the Schools of Business and Public Health and the College of Arts and Sciences. Students in Interdisciplinary Engineering will have the opportunity to develop a plan of study and research topic which incorporates course work and faculty expertise from two or more of these disciplines.

The students enrolled in the Interdisciplinary Engineering Ph.D. program will gain the skills needed to succeed as independent and productive investigators in multidisciplinary analysis and design, with applications over a wide spectrum of science, engineering, health, and medical fields. The interdisciplinary program will:

- Provide a rigorous academic curriculum including course work in two or more disciplines,
- Provide collaborative interactions with students and faculty from a variety of disciplines,
- Provide unique opportunities for interdisciplinary research, and
- Facilitate continued development of high quality research programs supported by external funding. Two tracks are available in the Interdisciplinary Engineering Ph.D. program – Computational Engineering and Environmental Health & Safety Engineering.

Admission Requirements

Students applying to the Interdisciplinary Engineering Ph.D. program have completed an undergraduate degree in a supporting field and must submit official transcripts and Graduate Record Exam (GRE) scores with their application. In general, GRE quantitative and verbal scores of at least 50th percentile and a minimum undergraduate or master's degree grade point average of 3 on a 4 point scale are required for admission. Students for whom English is a second language should have a score no less than 100 on the Internet Based TOEFL (Test of English as a Foreign Language). In the essay submitted by the student as part of the application package, the applicant is encouraged to identify his/her research interest. This information will help the admission committee in decision making. The Interdisciplinary Engineering Admissions Committee reviews all applications completed and submitted and will make all admission decisions.

Degree Requirements

The Ph.D. in Interdisciplinary Engineering promotes a research-based curriculum. A minimum number of core courses will be required of all students in the program, with additional course work directed by the student's graduate research committee based on the student's area of interest. Committee members must be selected from at least two different disciplines, and the planned curriculum must result in cross training in two or more disciplines.

Students entering the Ph.D. program with a baccalaureate degree must, in keeping with UAB Graduate School Policies, complete at least 48 hours of course work prior to admission to candidacy. Up to 16 credits of

the 48 can be as non-dissertation research credits, and up to 10 credits can be as lab rotations, seminars or directed study credits. Students entering the Ph.D. program with a Master's degree in a related field, M.D., DMD, etc., must complete at least 27 credit hours of course work prior to candidacy. Up to 6 credits of the 27 can be non-dissertation research credits, and up to 6 credits can be as lab rotations, seminars, or directed study credits.

The UAB Graduate School also requires that students complete at least two semesters as a full time student in candidacy or accumulate at least 24 credits in research hours or course work in candidacy prior to granting of degree. At least 24 hours of dissertation research will be required for Ph.D. program graduates in Interdisciplinary Engineering.

All students in the IE program must complete the following core courses:

Requirements		Hours
EGR 710	Intro to Interdisciplinary EGR	3
EGR 711	Methodology for IEGR Research	3
EGR 796	Journal Club in Interdisciplinary Engineering	1

A Comprehensive Exam is required of all doctoral candidates. The exam may include both written and oral components and will include presentation of the student's dissertation proposal. The exam will be administered by the student's graduate research committee. Upon successful completion of the Qualifying Exam and completion of at least 48 hours of course work (in keeping with Graduate School requirements), a student is admitted into doctoral candidacy.

A dissertation showing the ability to conduct independent research and organizational and presentation skills must be prepared on a topic in the research field of interest. Dissertation results are expected to be submitted for refereed scholarly publication. The dissertation must comply with UAB dissertation preparation guidelines. When the dissertation has been completed, doctoral candidates will present and defend their work before their graduate research committee and the public. This defense will constitute the candidate's final exam. The results of the examination must be reported to the Graduate School at least six weeks before the commencement at which the degree is to be conferred.

Program Resources

High Performance Computing (HPC), High Fidelity Simulations (HFS), Tera/Penta-scale data mining/management/analysis, image processing, feature extraction, pattern recognition, and geometry reconstruction are the key enabling technologies in addressing 21st century science and engineering problems. These technologies are necessary for the development of cross-cutting tool kits to enhance research and development in interacting biological, chemical, medical, physical, business and finance, and engineering phenomena associated with interdisciplinary engineering research.

In response to this need, UAB has made a strategic investment in establishing an Enabling Technology Laboratory (ETLab). The ETLab provides software and hardware infrastructure and support for high performance parallel and distributed computing, numerical tools, information technology-based computing environments, and computational simulation to UAB and Southern Research Institute (SRI) researchers. In collaboration with UAB interdisciplinary investigators, the ETLab has established 6.0+ Teraflops high performance computing clusters, including an IBM Blue gene with 2048 processors and a visualization infrastructure with stereoscopic and high resolution large displays. Both hardware and software essential for interdisciplinary engineering research can be fully supported by this equipment.

A 3D laser scanner necessary for full three-dimensional modeling and reconstruction was acquired by a collaborative team including faculty from the Schools of Engineering and Medicine. Access to this and other equipment, as well as clinical data available in the Radiology, Orthopedic, and Surgery departments and the School of Dentistry will be available to the students and interdisciplinary teams of faculty members participating in the interdisciplinary engineering program. These teams have already been collaborating on several sponsored and un-sponsored research programs in both computational engineering and environmental health and safety engineering tracks.

Additional equipment to facilitate engineering research is available to Interdisciplinary Engineering students through the laboratories of the Departments of Materials Science & Engineering, Mechanical Engineering, Electrical & Computer Engineering, Biomedical Engineering, and Civil, Construction, & Environmental Engineering. Additional equipment is available to students through participating faculty from other Schools across campus.

Program Curriculum

The Ph.D. in Interdisciplinary Engineering program encompasses a broad spectrum of possible fields of expertise in engineering and science, and as such, curriculums vary depending on the specific fields of research and background of the student.

Computational Engineering (CME) Track

The CME track of the Interdisciplinary Engineering program takes advantage of UAB's diversified Schools of Engineering, Public Health, Dentistry and Medicine and College of Arts and Sciences to produce Ph.D. candidates cross-trained in computational engineering from a variety of disciplines. The program provides students an in-depth foundation and innovation opportunities in interdisciplinary aspects of enabling technologies - geometry generation and computer-aided geometry design, mesh generation and adaptation, visualization, augmented reality and virtual reality, image processing and pattern recognition, design optimization, computational fluid dynamics, computational structural mechanics, high performance and parallel computing, and molecular dynamics applicable to disparate time and length-scale problems encountered in biomedical, biology, medicine and surgery, physics and biophysics, manufacturing, combustion, aeronautics and astronautics, and energy, environment and power.

Environmental Health and Safety Engineering (EHSE) Track

The EHSE track of the Interdisciplinary Engineering program takes advantage of UAB's diversified Schools of Engineering and Public Health, and College of Arts and Sciences as well as the nationally renowned health sciences center, to produce Ph.D. candidates cross-trained in public health, environmental, and safety engineering from a variety of disciplines. The program provides students with an understanding of basic mechanisms through which agents alter environmental, human, and ecosystem health, and the skills needed to evaluate and implement remediation for environmental problems, in the context of engineering and public health.

Coursework

In addition to EGR 710, EGR 711, and EGR 796, course selection is based on the research and career goals of the student, and curricula will vary between students. Students are guided by their faculty mentor (committee chair) and a graduate study committee composed of

faculty representing an interdisciplinary team in the student's area of research interest. The coursework must include courses from at least two disciplines.

This work will be completed under the guidance of the student's faculty mentor (graduate study committee chair). An approved 6 hour internship may be substituted for 6 of the required dissertation research hours. Non-dissertation Research and Dissertation Research hours will be taken through the department of the student's faculty mentor.

Additional Information

Deadline for Entry Term(s):	Fall: July 1· Spring: November 1, Summer: April 1
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE General Test (TOEFL is also required for international applicants whose native language is not English.)

Contacts:

Dr. David Littlefield
Graduate Program Director
Professor of Mechanical Engineering
littlefield@uab.edu
(205) 934-8460

Mrs. Heather Creel
Business Officer I
Department of Mechanical Engineering
hcreel@uab.edu
(205) 996-2669 or (205) 934-8460

Leonardo Art & Engineering Graduate Certificate

Contacts

David Littlefield, PhD
Professor and Chairman
littlefield@uab.edu
Department of Mechanical Engineering
BEC 257
1150 10th Avenue South
Birmingham, AL 35294-4461
(205) 934-8460

Heather Creel
Business Officer I
hcreel@uab.edu
Department of Mechanical Engineering
BEC 257
1150 10th Avenue South
Birmingham, AL 35294-4461
(205) 934-8460

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Description

Leonardo da Vinci is recognized as embodying the concept of the Renaissance Man as he was a painter, sculptor, architect, musician, scientist, mathematician, engineer, and inventor - an accomplished artist of the 16th century and a perfect example of interdisciplinary endeavors.

In this spirit of the Renaissance Person, the Departments of Mechanical Engineering and Art & Art History bring their collective expertise and experience together to offer a new interdisciplinary Category A certificate program involving an integrated art and engineering curriculum.

The Leonardo Art & Engineering program crosses traditional boundaries between academic disciplines and forges new collaborations to create a scholar/scientist/artist ready to meet the demands of the 21st century.

The objectives for the program are to:

- Provide cross-disciplinary training in simulation, art, visualization, and virtual reality to students with a BS/BA degree in Arts and Sciences, Engineering, Business, or Healthcare-related disciplines for addressing marketing, education/training, entertainment, product development, and design application demands of the 21st century growth area in 3D and VR technologies.
- Offer a mechanism for the large number of practicing artists, engineers, healthcare professionals, business managers, and game developers in Alabama and Birmingham to acquire additional training and education in simulation, 3D visualization, and VR.
- Provide a specialized education suitable to the needs of in-state, out-of-state, and international students interested in the application of 3D visualization, VR, and simulation to the industry or business segment of their preference. The program will provide the students with highly specialized and marketable skills.

Program Requirements

- Students must be admitted to either Department in either the undergraduate or graduate program or to the UAB Graduate School as a non-degree seeking student. (Undergraduates may begin work on the certificate in their senior year provided they have satisfied prerequisite requirements and obtained approval from the Graduate School to take graduate level courses. A certificate can only be awarded after completion of the BA or BS degree requirements.)
- Students must be admitted to the Leonardo Art & Engineering Certificate program using the degree-seeking application found on the UAB Graduate School Apply Yourself website.
- Certificate requires a minimum of 18 semester hours.
- Relevant courses taken towards the certificate may be applied to the MS degree offered by the Department of Mechanical Engineering or MA degree offered by the Department of Art & Art History.
 - One course, up to three semester hours, may be transferred from another institution. This may be the required course or one of the graduate level courses.
 - Courses taken from UA and UAH by IITS may be applied to certificates

Course Requirements

Total of 18 credit hours, as follows:

Requirements		Hours
ME 521	Introduction to Computational Fluid Dynamics Basics	3
or ME 564	Introduction to Finite Element Method	
ARS 520	Sculpture	3-6
ARS 561	3D Modeling	3
ME 698	Non-Thesis Research	1-12
ARS 588	Seminar in Time Based Media	3
Total Hours		13-27

Professional Degree Programs

In an effort to meet increasing industry demands for highly skilled workers, the School of Engineering offers a variety of professional programs. These programs are designed to benefit working professionals who seek to increase their qualifications through specialized degree and certificate programs. The following three tracks are available in the Master of Engineering (MEng): Construction Engineering Management; Advanced Safety Engineering and Management; and Information Engineering and Management.

Advanced Safety Engineering and Management

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Note that this program is totally online.

Web site:	http://www.uab.edu/asem
Degree Offered:	MEng
Director:	Martha W. Bidez
E-mail:	mbidez@uab.edu
Program Manager	Randy Cadieux
Phone:	(205) 480-9759
E-mail	rcadieux@uab.edu

Instructors

The MEng-ASEM graduate program is taught by a team of practicing safety and health professionals with Dr. Martha Bidez serving as overall Course Master. Practitioner-Scholars facilitate online discussions on key topics of interest in their industry sector and provide industry-specific case studies. Students participate in peer-to-peer learning activities discussing current topics of interest and real world experiences using on line discussion boards.

ASEM Admission Requirements

Admission to the UAB MEng-ASEM program requires the following:

- An undergraduate degree with a minimum 3.0 GPA from a regionally accredited school and a minimum of five years of professional work experience as evidenced by resume and recommendations.
 - Undergraduate degree does not have to be in engineering.
 - One of the recommendations must be a self-recommendation and one must be from a current, direct supervisor
 - Applicants not satisfying the grade point average requirement and/or holding a degree from a nationally accredited school may

receive admission on a provisional basis, subject to assessment and recommendation of the program director.

To apply, go to Apply Yourself and complete and submit your online application.

Requirements		Hours
ASEM 610	Intro to System Safety	3
ASEM 611	Hazard Analysis & Waste Elim	3
ASEM 612	Engineering Risk	3
ASEM 613	Human Performance and Engineering Design	3
ASEM 614	Engineering Ethics and Acceptable Risk	3
ASEM 615	Lead thru Climates of Change	3
ASEM 616	Policy Issues in Prevention through Design	3
ASEM 617	Crisis Leadership and Safety-Critical Design	3
ASEM 618	Intrapreneurship & Cal Risk	3
ASEM 619	Capstone Project - Part 1	3
ASEM 620	Capstone Project - Part 2	3
ASEM 601	ASEM Seminar	0

Additional Information

Comments: The ASEM program is totally online. There are no campus classes, meetings, or activities. Course delivery includes asynchronous and synchronous learning modes.

Entrance Tests: None

Number of Recommendations Required: Three (including self-recommendation and recommendation from your current, direct supervisor)

Deadline for All Application Materials to be in the Graduate School Office: Six weeks before term begins (see UAB academic calendar - <https://www.uab.edu/students/academics/academic-calendar>)

Application Submission Deadline for Fall: July 1; **Spring:** November 1; **Summer:** April 1

For detailed program information, contact:
 Randy Cadieux, MS, MEng, Program Manager and Instructor
 MEng in Advanced Safety Engineering and Management
 UAB School of Engineering, HOEN 101
 1720 2nd Avenue South, Birmingham, AL 35294-4440
 Telephone: 205-480-9759
 E-mail: asem@uab.edu
 Web: <http://www.uab.edu/asem>

Construction Engineering Management

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School

Degree Offered:	M.Eng.
Director:	Wilbur Hitchcock
Phone:	(205) 504-1386
E-mail:	wah@uab.edu

Web site: <http://www.uab.edu/engineering/cem/>

CEM Admission Requirements

Admission to the UAB CEM requires

1. Bachelors degree from an accredited U.S. College or University
2. Personal interview with program manager
3. Two letters of recommendation
4. NO GRE REQUIRED

To apply:

Go to Apply Yourself for the UAB Graduate School and fill out application.

- Should apply as Graduate Application.
- Please make sure you use an email and phone number where you can be contacted for an interview.
- Use the area on the left and choose "Application for Admission as a Degree-Seeking Student".
- Under the link Application Information and the option Program Applying to: choose Information Engineering and Management. Under Additional Information you will be asked to upload a resume.

Once your application is complete, a member of the committee will contact you for an interview.

Additional Information

Deadline for Entry Term(s):	Spring: November 1, Fall: July 1
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Two
Entrance Tests:	N/A

For detailed information, contact:

Dianne Gilmer, MEng
 Hoehn 130B, 1720 2nd Avenue South, Birmingham, Alabama
 35294-4440
 Telephone: 205-975-5848
 E-mail: digilmer@uab.edu
 Web: <http://www.uab.edu/engineering/cem>

Requirements	Hours
CE 669 Advanced Project Management	3
CE 670 Const Estimating & Bidding	3
CE 671 Constr Liability & Contracts	3
CE 672 Constr Methods and Equipment	3
CE 673 Construction Contracting Bidding and Estimating	3
CE 674 Green Bldg Desgn/Construction	3
CE 675 Fundamentals of Financial & Managerial Accounting for Non-Financial Managers	3
CE 676 Construction Project Risk Management	3
CE 688 Strategic Management and Leadership Applications in a Global Environment	3
CE 689 Building Information modeling (BIM) Techniques	3

CE 669 and CE 672 require a minimum grade of B to progress in this program.

Information Engineering and Management

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.Eng.
Director:	Dr. Dale W. Callahan, PE
Phone:	(205) 934-8480
E-mail:	iem@uab.edu
Web site:	http://www.uab.edu/iem

IEM Admission Requirements

Admission to UAB Information Engineering and Management requires:

1. An undergraduate degree from a regionally accredited university.
2. Preference is given to engineering, math, science or technical-related undergraduate degrees.
3. Original transcripts from every college/university attended should be requested by the applicant and sent directly to the UAB Graduate School.
4. Relevant industry work experience as evidenced by your resume and three recommendations.
5. An essay containing a short paragraph addressing each of the following questions:
 1. Why do you want to be a part of IEM and what do you expect to gain?
 2. Describe your area(s) of technical expertise.
 3. Tell us about one major accomplishment and one major setback you have faced in your career and how that impacted you.
 4. Why will your classmates be glad you are on their team?
6. A video introducing yourself to IEM. The video should be less than 5 minutes in length. Please tell us a little about yourself, what you've done professionally and why you want to be admitted to IEM. The video should be posted to YouTube, marked private with a limited access URL and the link emailed to iem@uab.edu.
7. An interview with the IEM admissions committee may also be required.
8. No GMAT/GRE required for admission to IEM.

To Apply:

Whether you are on campus or online, or some of both, here is what all entering clients need to do:

Go to Apply Yourself for the UAB Graduate School and fill out an application.

- Choose "Application for Admission as a Degree-Seeking Student".
- Under the link **Application Information**, you will be asked to select the **Program Applying to**: select Information Engineering and Management.
- Complete the following:
 - biographical data
 - application information - No GMAT/GRE required for admission so select "waived"

- educational background (list all schools attended, even if you did not graduate from that institution)
- Names and e-mail addresses for 3 references - the system will send an electronic request to each reference
- Upload an essay addressing questions listed above
- Additional Information - upload a current resume
- Provide payment for application (enter credit card or mail a check for application fee) and submit application.
- IEM Requirements: The photograph and video link should be e-mailed to IEM directly at iem@uab.edu. (iem@uab.edu)
- We encourage applicants to complete their application early to make sure they are considered for admission as soon as possible. A complete application means that all materials (transcripts, essay, resume, etc.) have been received by the Graduate School and the video should be uploaded to YouTube.
- Acceptance is determined by the IEM Admissions Committee.
- Scholarships may be available – see the IEM website for more information.

Late Applicants

Applicants who miss the Graduate School's deadline for admission may apply as "non-degree seeking" in **Apply Yourself** and pay an additional application fee. Late applicants are still required to submit the paperwork outlined above. The non-degree seeking deadline is typically 2-4 weeks before classes begin. An official transcript confirming the award of a bachelor's degree from a regionally accredited institution is required for non-degree admission.

Additional Information

Number of Recommendations Required: Three

Entrance Tests: N/A

For more information, contact IEM Director-Dr. Dale Callahan, PE or IEM Program Manager-Maria Whitmire, CAP-OM; IEM, Hoehn 370, 1075 13th Street South, Birmingham, Alabama 35294-4440.
Telephone: 205-934-8480
E-mail: iem@uab.edu
Web: www.uab.edu/iem

Information Engineering and Management Courses – IEM

Requirements		Hours
IEM 601	Introduction to IEM ¹	1
IEM 602	Leading Collaborative Teams ¹	1
IEM 603	Communication for Technology Executives ¹	1
IEM 610	Communication for Technology Professionals	3
IEM 611	Leading Technology Organizations	3
IEM 612	Project Leadership	3
IEM 620	Technical Entrepreneurship	3
IEM 625	Technology and Innovation	3
IEM 630	Systems Engineering	3
IEM 631	Operational Decision-Making	3
IEM 645	Financial Concepts for Entrepreneurs	3
IEM 646	Strategic Planning	3

IEM 690	Special Topics in Area ²	1-3
IEM 695	IEM Design Project	3

- ¹ Seminar course registration (IEM 601, IEM 602, or IEM 603) is required every Fall and Spring semester, except the semester of graduation. Multiple registrations of IEM 602 and IEM 603 are allowed.
- ² This is an elective course and does not apply to required coursework for degree.

Biomedical Engineering

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Biomedical Engineering (Ph.D., M.S.B.M.E., M.S.B.M.E. with Certificate in Technology Commercialization and Entrepreneurship)

Degrees Offered: Ph.D., M.S.B.M.E., M.S.B.M.E. with Certificate in Life Sciences Entrepreneurship

Phone: (205) 975-2119

E-mail: uabmegrad@uab.edu

Web Site: www.uab.edu/bme

Program Information

M.S.B.M.E. Program

The Master of Science in Biomedical Engineering prepares students for entry into the doctoral program, biomedical industry, or professional school. Primary research areas are biomedical imaging, biomedical implants and devices, cardiac electrophysiology, multiscale computational modeling, tissue engineering and regenerative medicine. Other research opportunities are available through our on-going collaborations with the UAB Medical and Dental Schools. With the terminal degree, employment is usually found in health-care delivery, medical devices, pharmaceuticals, biomedical imaging, instrumentation, medical sales and marketing, regulatory agencies, or computer application groups. For admission to the program, a student should have earned a bachelor's degree in biomedical engineering, engineering or a closely-related field.

Students with undergraduate degrees in the physical sciences, life sciences, or mathematics will also be considered for admission; however, such students may be required to demonstrate competence in engineering areas usually found in an undergraduate engineering curriculum. In some cases, preparatory courses in mathematics, engineering or life sciences may be required, with specific recommendations made by the Biomedical Engineering (BME) Graduate Program Committee. Admission to the BME Master's program is competitive, and successful applicants will usually present scores of at least 156 on the verbal and at least 159 on the quantitative sections of the GRE General Test (equivalent to 550 and 750 under the previous scoring system). Typical students have an undergraduate GPA of 3.5 or greater and have participated in at least one research project while an undergraduate (e.g., honors research, summer research experience, laboratory research, senior design, internship).

The student's research advisor and the Graduate Program Committee work to devise an individualized curriculum developed to ensure each student obtains the coursework to provide an in-depth knowledge of both quantitative methods and human physiology necessary to succeed

in completion of the thesis research. The master's degree requires a minimum of 30 semester hours of graduate coursework beyond the bachelor's including 24 semester hours of course work and 6 hours of thesis research (BME 699). All students are required to take BME 517 Engineering Analysis, BME 670 Quantitative Physiology, three one-hour departmental seminar courses (BME 601), at least one three-hour Biostatistics course. Additional course work is a combination of graduate-level life sciences and bioengineering courses selected in consultation with your thesis advisor and approved by the BME Graduate Program Committee.

The majority of students carry out research leading to a thesis (plan I option). To receive a master's degree in BME, the student must publish their research in a peer-review journal article; typically a first-author publication. The student is expected to present their research at a scientific or technical conference; preferably at a relevant national or international scientific meeting. Publication of at least one peer-reviewed manuscript is a requirement for graduation from the BME M.S. Program. Plan I students must register for at least six semester hours of BME 699 (thesis research) and successfully write, present and defend a thesis based on their research.

Additionally, BME now offers a Master's in Biomedical Engineering with a Certificate in Technology Commercialization and Entrepreneurship. This represents a unique graduate training program featuring collaboration between BME and the UAB School of Business. Biomedical engineering principles are blended with business-model planning in an effort to equip students to not only become scientists and researchers, but also capable business professionals. BME students partner with Business students pursuing an M.B.A. to turn biomedical devices into commercial successes that are marketed worldwide. They will participate in the Invention to Innovation (i2i) activities, in which they will pitch their start-up companies and enter business plan competition with the Alabama Launchpad (<http://www.alabamalaunchpad.com/>). In addition to the BME course and thesis requirements, students in the M.S.B.M.E. with a Certificate in Life Sciences Entrepreneurship will take 12 credit hours of M.B.A. coursework, including MBA 681: Idea to IPO (offered fall); MBA 673: Technology-based Venture Planning (offered spring); and MBA 690: (offered as Managing Innovation in summer term). Choose one* from MBA 691: Independent Study or ENT 526 Practicum in Commercialization. *Other related courses may be approved by Certificate Program Director.

Ph.D. Program

The Ph.D. degree prepares students for careers in industry and academics. Students entering the doctoral program will possess a B.S. or M.S. or be currently enrolled in the D.M.D./Ph.D. or M.D./Ph.D. program at UAB.

Admission to the Ph.D. program is competitive, and successful applicants will usually present scores of at least 156 on the verbal and at least 159 on the quantitative sections of the GRE General Test (equivalent to 550 and 750 under the previous scoring system). Typical students have a graduate GPA of 3.5 or greater and have a significant research experience. Students admitted to the doctoral program typically receive a competitive stipend that usually includes payment of tuition.

Students can be admitted to the Ph.D. Program with a B.S. degree in a field of biomedical engineering or closely-related discipline. Students with undergraduate degrees in the physical sciences, life sciences, or mathematics can also be considered to admission. Students entering the Ph.D. program with a B.S. are required to complete at least 72

semester hours of graduate work, including 48 semester hours of graduate course work, and a minimum of 24 hours of dissertation research (BME 799) earned over at least two semesters in candidacy. All students are required to take BME 517 Engineering Analysis, BME 770 Quantitative Physiology, and at least one 3-hour Biostatistics course (BST 621 Statistical Methods I) and 6 semesters of BME seminars (BME 701 Seminar in Biomedical Engineering). The remaining course work should be a combination of life sciences, biomedical engineering, or mathematics elective courses that provide sufficient breadth and depth to gain the necessary graduate level, interdisciplinary knowledge to complete thesis research. Up to three credit hours of bioengineering elective course work can be taken as directed independent study. If approved by the Graduate Program Committee. At least three peer-reviewed first-author publications are required for completion of the Ph.D. in the Department of Biomedical Engineering.

Students can be admitted to the Ph.D. Program following completion of a Master's Degree in BME or closely-related discipline. If the Master's Degree in BME was obtained at UAB (Plan I option), the admission requires an endorsement from their Master's Thesis Committee. As a student completes a master's thesis and prepares for a defense, he/she should indicate the desire to go on for the Ph.D. to the Research Advisor and the BME Graduate Program Director. All students in the M.S. program who wish to pursue the Ph.D. degree need only write a letter to the Chair to be considered by the Admissions Committee. A student is not required to re-apply to the Graduate School. The BME Graduate Program Committee evaluates all BME students who are required to complete the M.S. degree before entering the Ph.D. program before they proceed into the Ph.D. program. Admission into the Ph.D. Program with a M.S. requires publication of at least one peer-reviewed journal article typically a first author publication). Students entering the Ph.D. program with a M.S. are required to complete at least 48 semester hours of graduate work beyond the Master's degree including 24 semester hours of course work and 24 hours of dissertation research (BME 799). earned over at least two semesters in candidacy. All students are required to take BME 517 Engineering Analysis, BME 770 Quantitative Physiology, and BST 621 Statistical Methods I, if not taken as part of their master's program, and 3 semesters of BME seminars (BME 701 Seminar in Biomedical Engineering). The remaining course work should be a combination of life sciences, biomedical engineering, or mathematics elective courses that provide sufficient breadth and depth to gain the necessary graduate level, interdisciplinary knowledge to complete thesis research. At least two peer-reviewed first-author publications beyond the M.S.B.M.E. degree are required for completion of the Ph.D. in the Department of Biomedical Engineering.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	February 1
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL is also required for international applicants whose native language is not English)
Comments	Students are rarely admitted for the Spring term

For detailed information, contact Dr. Vladimir Fast, Associate Professor, BME Graduate Program Director, UAB Department of Biomedical

Engineering, 1670 University Blvd., Volker Hall B126, Birmingham, AL 35294-0019.

Telephone (205) 975-2119
E-mail uabmegrad@uab.edu
Web www.uab.edu/bme

Civil, Construction and Environmental

The Civil, Construction, and Environmental Engineering (CCEE) department offers master's and doctoral level programs, and cutting-edge research covering various facets of Civil Engineering theory and practice. A knowledgeable and experienced group of faculty members work closely with students to provide them with the tools required to succeed professionally in globally-competitive work environments.

Civil Engineering

Degree Offered:	M.S.C.E., Ph.D.
Director:	Dr. Robert W. Peters
Phone:	(205) 934-8430
Fax:	(205) 934-9855
E-mail:	rwpeters@uab.edu
Web site:	http://www.uab.edu/engineering/

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Admission Requirements

In addition to the UAB Graduate School admission requirements, requirements for admission to the program leading to the Master of Science in Civil Engineering degree include the following five criteria:

1. An undergraduate engineering degree from an accredited program by the ABET. Applicants who do not meet this criterion but who have an outstanding academic record in an engineering degree program not accredited by ABET, or in a baccalaureate degree program in a related field, may be admitted on probation. Students admitted in this category will be required to complete a sequence of undergraduate courses in addition to the normal requirements of the M.S.C.E. degree. This set of extra requirements will be specified in writing at the time of admission to the program.
2. GPA of 3.0 or better (A = 4.0) in all undergraduate degree major courses attempted;
3. Three letters of evaluation concerning the applicant's previous academic and professional work; and
4. Submission of scores achieved on the GRE General Test. Admission to the program is competitive and is based on all available evidence; for admission in good academic standing, scores above 160 on each component of GRE General Test are preferred. Minimum scores of 550 on the Test of English as a Foreign Language (TOEFL) and a 3.5 on the Test of Written English (TWE) are also required for those applicants whose native language is not English. These test scores will be used primarily if an applicant fails to meet minimum standards for admission in good standing and is being considered for admission on probation.

5. Verification of registration by examination as a Professional Engineer (P.E.) will satisfy criteria 4 above.

M.S.C.E. Program Requirements

The following minimum requirements apply to the plan of study for a student who has earned a baccalaureate degree in civil engineering. A student with an undergraduate degree in another field may also be accepted into the civil engineering program but will normally have to take additional preparatory coursework as part of an expanded plan of study. Continuous enrollment for at least 3 credit hours per term is required. Students receiving a research or teaching assistantship are required to be enrolled as full-time students every semester. A full-time student is one who is enrolled in at least 9 credit hours per term. **Enrollment in the Civil Engineering Graduate Seminar (CE 641) is required at least once prior to graduation.**

Plan I (Thesis Option)

1. In addition to the general Graduate School requirements, the student must successfully complete at least 33 semester hours of graduate credit, including:
 - a) A minimum of 18 semester hours in civil engineering;
 - b) Up to 6 semester hours in disciplines outside civil engineering, such as other engineering disciplines, mathematics, biology, earth science, physics, urban affairs, or public health.
 - c) A minimum of 9 hours of - Masters Thesis Research.
2. The student must pass a comprehensive examination on the content of the program. This examination may be written, oral, or both and shall include an oral defense of a thesis.

Plan II (Nonthesis Option): Research/Design Emphasis

1. The student must successfully complete at least 33 semester hours of graduate credit including:
 - a) A minimum of 24 semester hours in civil engineering;
 - b) Up to 6 semester hours in disciplines outside civil engineering, such as; other engineering disciplines, mathematics, biology, earth sciences, physics, chemistry, or public health; and
 - c) A minimum of 3 hours of CE 698 – Nonthesis Research under the direction of the graduate study committee chair, resulting in a committee approved written report.
2. The student must pass a comprehensive examination on the content of the program. This examination may be written, oral, or both and shall include an oral defense of the nonthesis research project.

Areas of Specialization

Specialization programs are available in the fields of environmental engineering, structural engineering/structural mechanics, construction engineering management; and transportation engineering. Supporting courses are offered in geotechnical engineering, optimization, engineering law and other areas. **Enrollment in the Civil Engineering Graduate Seminar series (CE 641/ CE 741) is required of all graduate students at least once prior to graduation.**

Required Courses for Specialization in Environmental Engineering

In addition to the M.S.C.E. program requirements, the following undergraduate classes, or Program Director approved course equivalents (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in environmental engineering:

Requirements	Hours
CE 236 Environmental Engineering	3
CE 337 Hydraulics	3
CE 344 Civil Engineering Analysis I	3
CE 430 Water Supply/Drainage Design	3
or CE 480 Introduction to Water and Wastewater Treatment	

Required Courses for Specialization in Structural Engineering/Structural Mechanics

In addition to the M.S.C.E. program requirements, the following undergraduate classes, or Program Director approved course equivalents (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in structural engineering/structural mechanics:

Requirements	Hours
CE 332 Soil Engineering	4
CE 344 Civil Engineering Analysis I	3
CE 360 Structural Analysis	3
CE 450 Structural Steel Design	3
CE 455 Reinforced Concrete Design	3

Required Courses for Specialization in Construction Engineering Management

In addition to the M.S.C.E. program requirements, the following undergraduate classes, or Program Director approved course equivalents (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in construction management.

Requirements	Hours
CE 395 Engineering Economics	3
CE 497 Construction Engineering Management	3

Required Courses for Specialization in Transportation Engineering

In addition to the M.S.C.E. program requirements, the following undergraduate classes, or Program Director approved course equivalents (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in transportation engineering.

Requirements	Hours
CE 344 Civil Engineering Analysis I	3
CE 345 Transportation Engineering	3

Ph.D. Program

This is a joint program with the University of Alabama in Huntsville (UAH). A typical student entering the program would already have an undergraduate degree in Civil Engineering from an ABET accredited program. Students with outstanding records in related fields or from a non-accredited engineering program will be considered for admission on conditional standing, and must remedy deficiencies in their preparation

after the start of their academic program. They may then be granted unconditional standing in the doctoral program.

The program requires 48 credit hours of coursework beyond the baccalaureate level or 24 credit hours of coursework beyond the master's degree, plus a minimum of 24 credit hours of dissertation research.

Enrollment in the Civil Engineering Graduate Seminar (CE 741) at least once prior to graduation is required. A minimum of 6 credit hours must be taken from the UAH campus, and may be taken through the Intercampus Interactive Telecommunications (IITS) System here at UAB, Distance Learning courses from UAH (DL) or Web-based Instruction from UAH.

A comprehensive examination is required of all doctoral candidates. This examination is given after (a) all coursework is completed, and (b) the student's Graduate Committee, which consists of faculty representatives from both campuses, deems the student to have adequate preparation in the major and minor fields of study. The examination is conducted by the student's Graduate Committee and administered on the resident campus. The examination consists of a written part and an oral part. During the oral portion of the examination, the student also presents his/her dissertation proposal. The Comprehensive Examination may only be taken twice.

For additional details, please refer to the CCEE website: <http://www.uab.edu/engineering/>

Additional Information

For detailed information, contact Jennifer A. Vinson, Administrative Associate (jav@uab.edu), UAB Department of Civil, Construction, and Environmental Engineering, HOEN 140, 1720 2nd Ave., S., Birmingham, AL 35294-4440. Physical location: 140 Hoehn Building, 1075 13th Street South, Birmingham, AL, Telephone # (205) 934-8430.

CE Specialty Certificate Programs

Category A certificates are offered by the Civil, Construction, and Environmental Engineering Department. Any undergraduate or graduate student in good standing who is pursuing a Civil Engineering degree (B.S.C.E., M.S.C.E., Ph.D.) may elect to simultaneously complete the requirements of his or her degree program and the Certificate Program. These certificates are listed on student transcripts and in the university graduation bulletin. Certificates can be earned in:

1. Construction Engineering Management
2. Sustainable Engineering Management
3. Structural Engineering
4. Environmental Engineering
5. Transportation Engineering
6. Geotechnical Engineering

Civil Engineering (B.S.C.E.) graduates who complete the Certificate Program will have greater depth in specific technical area. The certificates also allow a means for practicing engineers to acquire expertise beyond a Bachelor degree, and have it formally recognized, without completing a program leading to a master's degree. This technical expertise will enhance their proficiency and marketability. Up to 12 graduate level credit hours taken for a certificate may be applied toward the M.S.C.E. degree.

Students who wish to pursue a CE Certificate must be admitted to the Department as either undergraduate or graduate students (B.S.C.E. or M.S.C.E. program). Students who are not currently enrolled in the civil

engineering program may be admitted as a non-degree seeking student to earn a Certificate.

Certificates require a minimum of 15 semester hours. They consist of one required course (which may also count toward the B.S.C.E. degree at UAB) and four graduate level elective courses in the area of specialization. Courses that can be applied towards the Certificate can be found at <http://www.uab.edu/engineering/home/departments-research/civil>

For more information, please contact Jennifer A. Vinson, Administrative Associate, 140 Hoehn Engineering Building, 1075 13th Street South, telephone (205) 934-8430, e-mail jav@uab.edu

Master in Engineering – Construction Management Program Requirements

The Department of Civil, Construction, and Environmental Engineering is pleased to announce its newest program, a Masters in Engineering – Construction Management. This program is designed to enhance the engineering and business qualifications of working professionals interested in project and company management.

In addition to the Graduate School admission requirements, requirements for admission to the program leading to the Master in Engineering – Construction Management degree include the following:

1. Must have a Bachelors degree from an accredited U.S. College or University;
2. Must have an Undergraduate GPA of 3.0 or higher (individuals not meeting this requirement may start on a probationary status with strong interview and recommendations);
3. No GRE required for U.S. Citizens;
4. Must submit at least two letters of recommendation
5. Must schedule an interview with the Program director or coordinator.
6. Student must successfully complete at least 33 semester hours of graduate credit

Electrical and Computer Engineering

Degree offered:	M.S.E.E.
Director:	Mohammad Haider
Phone:	(205) 934-8440
E-mail:	mrhaider@uab.edu
Web site:	https://www.uab.edu/engineering/home/about-ece

Program Information

The Master of Science in Electrical Engineering (M.S.E.E.) prepares students for a professional career in industry or entry into a doctoral program or professional school. The M.S.E.E. program builds upon the broad foundation provided by a Bachelor of Science in Electrical Engineering by supplying depth in specific areas of electrical and computer engineering through advanced coursework and a thesis or project experience.

Admission Requirements

Requirements for admission to the electrical engineering master's degree program include the following:

1. A bachelor's degree in electrical or computer engineering.
2. A 3.0 (A = 4.0) or better GPA in all junior and senior electrical and computer engineering and mathematics courses attempted;
3. Three letters of evaluation concerning the applicant's previous academic and professional work; and
4. An acceptable score on the GRE General Test and the TOEFL, if applicable.

Financial Support

Limited financial assistance may be available for well-qualified students admitted into the M.S.E.E. program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are a number of minority fellowships available through the Graduate School. Contact the UAB Graduate School directly for further information.

Program Requirements

Assuming that a student possesses appropriate academic preparation for this degree, 33 semester hours of course work will be required beyond the bachelor's degree. This work must be distributed as follows:

Plan I (Thesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization;
2. Six semester hours of graduate-level courses in an area related to the student's area of technical specialization; and
3. Six semester hours of courses having a mathematical emphasis; and
4. Successful completion and oral defense of a thesis developed through registration for at least nine semester hours of EE 699.

Plan II (Nonthesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization;
2. Twelve semester hours of graduate-level courses in an area related to the student's area of professional emphasis (these courses may address technical subjects or subject matter appropriate to an emphasis in engineering management or entrepreneurship);
3. Six semester hours of courses having a mathematical emphasis; and
4. Successful completion of a project developed through registration for at least 3 semester hours of EE 697.

Additional Information

Deadline for Entry Term(s):	Fall, Spring, Summer
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three

Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	GRE and evaluation forms requirements waived for persons holding registration as professional engineers

For detailed information, contact
Dr. Mohammad Haider, Graduate Program Director
UAB Department of Electrical and Computer Engineering, BEC 255E
1720 Second Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-8440

E-mail mrhaider@uab.edu

Web <http://www.uab.edu/engineering/home/departments-research/ece>

Electrical Engineering

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.E.E.
Director:	Mohammad Haider
Phone:	(205) 934-8440
E-mail:	mrhaider@uab.edu
Web site:	http://www.uab.edu/engineering/home/departments-research/ece

Program Information

The Ph.D. degree prepares students for professional and research careers in industry and academia. The Ph.D. in Computer Engineering is awarded by UAB and is offered through a program shared with the University of Alabama in Huntsville (UAH), allowing both UAB and UAH to contribute to the program.

Admission Requirements

Requirements for admission to the electrical engineering master's degree program include the following:

1. A bachelor's degree in electrical or computer engineering.
2. A 3.0 (A = 4.0) or better GPA in all junior and senior electrical and computer engineering and mathematics courses attempted;
3. Three letters of evaluation concerning the applicant's previous academic and professional work; and
4. An acceptable score on the GRE General Test and the TOEFL, if applicable.

Financial Support

Limited financial assistance may be available for well-qualified students admitted into the M.S.E.E. program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are a number of minority fellowships available through the Graduate School. Contact the UAB Graduate School directly for further information.

Program Requirements

Assuming that a student possesses appropriate academic preparation for this degree, 33 semester hours of course work will be required beyond the bachelor's degree. This work must be distributed as follows:

Plan I (Thesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization
2. Six semester hours of graduate-level courses in an area related to the student's area of technical specialization; and
3. Six semester hours of courses having a mathematical emphasis; and
4. Successful completion and oral defense of a thesis developed through registration for at least nine semester hours of EE 699.

Plan II (Nonthesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization;
2. Twelve semester hours of graduate-level courses in an area related to the student's area of professional emphasis (these courses may address technical subjects or subject matter appropriate to an emphasis in engineering management or entrepreneurship);
3. Six semester hours of courses having a mathematical emphasis;
4. Successful completion of a project developed through registration for at least 3 semester hours of EE 697.

Additional Information

Deadline for Entry Term(s):	Deadline for Entry Term(s):
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	GRE and evaluation forms requirements waived for persons holding registration as professional engineers

For detailed information, contact

Dr. Mohammad Haider Graduate Program Director
UAB Department of Electrical and Computer Engineering, BEC 255E
1720 Second Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-8440

E-mail mrhaider@uab.edu

Web <http://www.uab.edu/engineering/home/departments-research/ece>

Computer Engineering

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.
Director:	Dr. Mohammad Haider
Phone:	(205) 934-8440
E-mail:	mrhaider@uab.edu
Web site:	http://www.uab.edu/engineering/home/about-ece

Program Information

The Ph.D. degree prepares students for professional and research careers in industry and academia. The Ph.D. in Computer Engineering is awarded by UAB and is offered through a program shared with the University of Alabama in Huntsville (UAH), allowing both UAB and UAH to contribute to the program.

Admission Requirements

Requirements for admission to the Ph.D. program include the following:

1. A bachelor's degree in an accredited electrical or computer engineering program or a bachelor's degree in a related program acceptable to the graduate faculty in Electrical and Computer Engineering;
2. A score of at least 550 on the verbal and quantitative sections of the Graduate Record Examination (GRE);
3. An acceptable score on the TOEFL examination for international students whose native language is not English;
4. An overall GPA of at least 3.0 on a 4.0 point scale, or at least 3.0 for the last 60 semester hours completed; and
5. Three letters of evaluation concerning the applicant's previous academic and professional work.

Students not having a bachelor's degree in electrical or computer engineering may be required to complete prerequisite courses.

Financial Support

Fellowships and/or assistantships may be available for well-qualified students admitted into the PhD program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are a number of minority fellowships available through the Graduate School. Contact the UAB Graduate School directly for further information.

Program Requirements

The course of study leading to the Ph.D. includes a minimum of 48 semester hours of course work beyond the bachelor's degree (excluding dissertation research). A student's advisory committee may allow appropriate course work pursued in completing a master's degree to be counted towards the 48 hour course work requirement, but a maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour course work requirement for the Ph.D. Requirements include the following:

1. A major consisting of a minimum of 18 semester hours of approved coursework in computer engineering;
2. A minor consisting of a minimum of 12 semester hours of approved coursework in mathematics, theoretical or formal methods as related to computer engineering;
3. A minor consisting of a minimum of 12 semester hours of approved coursework in electrical or computer engineering;
4. Additional coursework consisting of a minimum of 6 semester hours of approved coursework in supportive fields;
5. Successful completion of a preliminary examination;
6. Successful completion of a qualifying examination that includes a presentation of the dissertation research proposal. Successful completion of the qualifying examination leads to admission to candidacy;
7. Successful completion of a minimum of 18 semester hours in EE 799 Dissertation Research; and
8. Successful completion of a final examination on the dissertation.

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact

Dr. Mohammad Haider Graduate Program Director
UAB Department of Electrical and Computer Engineering, BEC 255E
1720 Second Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-8440
E-mail ElecCompEng@uab.edu
Web <http://www.uab.edu/engineering/home/about-ece>

Course Descriptions

See the graduate catalog of the University of Alabama at Huntsville (UAH) for doctoral courses at that university.

See the listing for the master's degree in electrical engineering (M.S.E.E.) for courses at the 500 level.

Unless otherwise noted, all courses are for 3 semester hours of credit. Course numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Materials Science and Engineering

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D., M.S.Mt.E.
Director:	Dr. Uday Vaidya

Phone: (205) 934-9199
 E-mail: uvaidya@uab.edu
 Web site: www.eng.uab.edu

MSE 382 Mechanical Behavior of Materials 3
 MSE 565 Characterization of Materials 4

Admission Requirements

In addition to the general Graduate School admission requirements, requirements for admission to the M.S.Mt.E. and Ph.D. graduate programs include the following criteria:

1. A 3.0 (A = 4.0) or better GPA on all undergraduate degree major courses attempted
2. MSE evaluates the three scores reported on the GRE revised General Test (as of August 2012):
 - a Verbal Reasoning score reported on a 130-170 score scale, in 1-point increments
 - a Quantitative Reasoning score reported on a 130-170 score scale, in 1-point increments
 - an Analytical Writing score reported on a 0-6 score scale, in half-point increments.

MSE recommends that a student receive a minimum quantitative score of 148/170 (600/800 on the old scale); a verbal score of 153/180 (500/800 on the old scale) and a score of 3/6 on the analytical writing

1. TOEFL is an additional requirement for international students. The revised TOEFL scoring scale for an internet based TOEFL test (iBT) is 0-120 which includes:
 - Reading Section (Score of 0-30)
 - Listening Section (Score of 0-30)
 - Speaking Section (Score of 0-30)
 - Writing Section (Score of 0-30)

MSE requires a minimum TOEFL score of 80-120 (20 in each section) to be considered for admission and financial support. For applicants who report TOEFL scores based on a paper test or a computer test, the scores will be compared to the iBT scale.

Preparatory Courses

A student seeking a graduate degree in Materials Engineering without a Baccalaureate degree in Materials Engineering or similarly named program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, must demonstrate competence at the undergraduate level in the areas of physical behavior of materials, thermodynamics, mechanical behavior of materials, instrumentation, and characterization. He/she may do this by passing all or some of the following courses depending on the student's academic background. Students may be exempted from individual courses if they demonstrate that they possess the knowledge from that course. However, the burden of proof is on the student. The decisions are based on a balance between assuring a sufficient background and imposing more extensive course demands. The preparatory courses must be taken on a pass/fail basis, with a "pass" being equivalent to a grade of B or better in the course. The courses that fulfill the preparatory requirements are:

Requirements		Hours
MSE 280	Engineering Materials	3
MSE 281	Physical Materials I	4
MSE 380	Thermodynamics of Materials (Not required if graduate students take MSE 603/703)	3
MSE 381	Physical Materials II	3

M.S.Mt.E. Program

The following minimum requirements for a Master of Science in Materials Engineering apply to a student who has earned a baccalaureate degree from a program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, in materials or metallurgical engineering or in a similarly named engineering program. A student with an undergraduate degree in another field of engineering or in the physical sciences may also be accepted into the Materials Engineering program. However, such a student will be required to demonstrate competence in fields of study that emphasize the interrelationship among structure, processing, performance, and properties of materials. This can be accomplished by one of the methods described under "Preparatory Courses." All full-time master's students must take MSE 601 Materials Science and Engineering Seminar every term.

Plan I (Thesis Option)

The student must successfully complete at least 24 semester hours of (primarily) materials engineering graduate course work.

- Of these 24 hours, 3 to 6 semester hours will be approved courses in mathematics, physical sciences, another engineering discipline or management (a maximum of 3 hours are allowed in management).
- Up to 9 of the 24 hours may be at the 500 level.
- The student must successfully complete and defend a thesis.
- The student must register for and successfully complete at least 9 semester hours of in addition to the 24 semester hours of course work.

Plan II (Non-thesis Option): Research/Design Emphasis

The student must successfully complete at least 30 semester hours of (primarily) materials engineering graduate course work.

- Of these 30 hours, 3 to 6 semester hours will be approved courses in mathematics, physical sciences, another engineering discipline or management (a maximum of 3 hours are allowed in management).
- Up to 9 of the 30 hours may be at the 500 level.
- The student must complete 3 semester hours of MSE 699 Thesis Research, involving an on-site research project (usually taken after completion of all coursework).
- Successfully complete a written comprehensive examination on all course work taken in the program or a comprehensive examination on the on-site research project topic. The latter option requires a publication-quality manuscript and oral presentation (with questions) deemed acceptable by the graduate committee.

Plan II (Non-thesis Option): Technology/Engineering Management Emphasis

The student must successfully complete at least 30 semester hours of graduate credits.

- 12 semester hours of course work in a specific area of materials science and engineering (at least 6 of these 12 hours must be at the 600 level).
- 6 semester hours of approved management course work.
- 9 semester hours of engineering-oriented management coursework.

- 3 hours of MBA 631-Administrative Theory and Practice.
- The student must also complete 3 semester hours of involving an on-site design or research project (usually undertaken after completion of all course work).
- Successfully complete a written comprehensive examination on all course work taken in the program or a comprehensive examination on the on-site research project topic. The latter option requires a publication-quality manuscript and oral presentation (with questions) deemed acceptable by the graduate committee.

Ph.D. Program

The Ph.D. program in Materials Engineering is offered jointly with the Department of Metallurgical and Materials Engineering at the University of Alabama (Tuscaloosa). All full-time doctoral students must take MSE 701-Materials Science and Engineering Seminar every term.

PhD Track (For students entering with a BS):

The following minimum requirements for a PhD in materials engineering apply to a student who has earned a baccalaureate degree from a program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, in materials or metallurgical engineering or in a similarly named engineering program. A student with an undergraduate degree in another field of engineering or in the physical sciences may also be accepted into the Materials Engineering program. However, such a student will be required to demonstrate competence in fields of study that emphasize the interrelationship among structure, processing, performance, and properties of materials. This can be accomplished by one of the methods described under "Preparatory Courses."

The requirements for a Ph.D. student entering with a BS degree are:

- A minimum of 48 hours of approved graduate course work in metallurgical engineering, materials engineering, or fields supportive of these (15 hours may be at the 500 level and at least 6 semester hours but no more than 12 must be in supportive fields (a maximum of 6 hours can be in management). Additional course work may be required at the discretion of the mentor and program director.
- Successful completion of a written qualifying examination covering the preparatory course sequence. (Students will receive a Plan II Master's upon successful completion of the Qualifying Exam and 30 hours of coursework).
- Successful completion of a Dissertation Research Proposal and examination on topics related to the student's research. (Completion of this step is required for Admission to Candidacy).
- A minimum of 24 semester hours in MSE 799 Dissertation Research.
- Successful defense of a research dissertation in metallurgical/ materials engineering.

PhD Track (For students entering with a MS):

This track is for students entering the program with a master's degree in Materials Engineering or a closely related field.

The requirements for a Ph.D. student entering with a MS degree are:

- A minimum of 24 hours of approved graduate course work in metallurgical engineering, materials engineering, or fields supportive of these (6 hours may be at the 500 level and at least 3 semester hours but no more than 6 must be in supportive fields (a maximum of 3 hours can be in management). Additional course work may be required at the discretion of the mentor and program director.

- Successful completion of a written qualifying examination covering the preparatory course sequence.
- Successful completion of a Dissertation Research Proposal and examination on topics related to the student's research. (Completion of this step is required for Admission to Candidacy).
- A minimum of 24 semester hours in MSE 799 Dissertation Research.
- Successful defense of a research dissertation in metallurgical/ materials engineering.

Additional Information

Deadline for Entry Term(s):	Each semester and summer
Deadline for All Application Materials to be in the Graduate School Office - Fall Semester:	March 1st
Deadline for All Application Materials to be in the Graduate School Office - Spring Semester:	August 31st
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments:	*To be considered for funding

For detailed information, contact Dr. Uday Vaidya, Graduate Program Director, The University of Alabama at Birmingham, Department of Materials Science and Engineering, BEC 254, 1150 10th Avenue South, Birmingham, AL 35294-4461.

Telephone 205-934-9199

Web <http://www.uab.edu/engineering/home/>

Graduate Automotive Technology Education (GATE)

The Graduate Automotive Technology Education (GATE) program is a Department of Energy funded initiative at UAB for advancing the state of the art in lightweight materials and manufacturing technologies for automotive, mass transit and truck. There is increasing emphasis on reducing weight in vehicles as a means to meet stringent Corporate Average Fuel Economy (CAFE) standards. The GATE program recruits graduate students from materials, mechanical, biomedical, civil and interdisciplinary engineering with a GPA of 3.5 or above. The GATE scholars work towards their research on GATE topics and enroll in GATE courses. A GATE certificate of completion is issued by the MSE department upon successful completion of GATE courses. Please visit www.uab.edu/engineering/composites for additional information and the application process for the GATE program.

Mechanical Engineering

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.M.E.
Director:	David Littlefield
Phone:	(205) 934-8460
E-mail:	littlefield@uab.edu

Web site: <http://www.uab.edu/engineering/home/departments-research/me/graduate>

M.S.M.E. Program Requirements

A bachelor's degree from an accredited (or equivalent) program in engineering or the physical sciences is required for admission to graduate study in mechanical engineering. The usual criteria for admission in good standing follows:

- Not less than B-level scholarship overall or over the last 60 semester hours of earned credit; and a minimum of 50th percentile on both quantitative and verbal portions of the GRE General Test. In addition, for foreign nationals, a minimum score of 80 (IBT) on the TOEFL is required. Other standardized examination scores will also be considered. A student not meeting these requirements may also be admitted, perhaps on probationary status, provided other information indicating likely success in the program is provided.

A student with an undergraduate degree in a field of engineering other than mechanical or in the physical sciences may also be accepted into the mechanical engineering program. However, such a student will normally have to take additional, preparatory coursework as part of an expanded plan of study (see "Preparatory Courses" later in this section).

PLAN I (Thesis Option)

1. The student must successfully complete at least 24 semester hours of coursework, including (in addition to the general Graduate School requirements)
 - Six semester hours in committee-approved* mathematics courses
 - Eighteen semester hours in committee-approved* mechanical engineering courses or approved related courses, including at least two semester hours of ME 694 Seminars in Mechanical Engineering and three semester hours in a course outside the student's research or specialization area.
2. The student must register for at least 6 hours of ME 699 Thesis Research in addition to the 24 semester hours of course work.
3. The student must successfully complete and defend a thesis.

* Before the first graduate semester at UAB, the Graduate Coordinator will advise new students regarding courses for the first semester. Before the end of the first semester, students will be assigned a Thesis Director based on research interest, and students will assemble their graduate committees. The committee will consist of the Thesis Director and two graduate faculty members with experience or expertise related to the student's thesis topic. The Thesis Director in coordination with the graduate committee will set the curriculum for the student.

PLAN II (Non-thesis Option): Research/ Design Emphasis

Generally, Plan II will be approved for students working full-time and attending UAB on a part-time basis or when the student demonstrates that Plan II offers superior educational benefits. After 15 credit hours of course work are completed, the student should select a project director and begin work on the final project. The election of Plan II must be approved by the student's graduate advisor.

1. The student must successfully complete at least 33 semester hours of coursework, including

- Six semester hours in approved mathematics courses
- A minimum of 27 semester hours in approved mechanical engineering courses or approved related courses. Out of these 27 semester hours, students must enroll in:
 - at least three (3) semester hours in a course outside the student's research or specialization area
 - at least two (2) semester hours of ME 694 Seminars in Mechanical Engineering
 - at least three (3) hours of ME 698 Non-Thesis Research involving design or research

2. The student must make a presentation on the research project and submit a final report which must be approved by the project director.

PLAN II (Non-thesis Option): Technology/ Engineering Management Emphasis

1. The student must successfully complete at least 33 semester hours of coursework, including
 - At least three semester hours in approved mathematics courses
 - At least six semester hours in approved mechanical engineering courses
 - At least two semester hours of ME 694 Seminars in Mechanical Engineering
 - At least six semester hours in one of the following two management applications areas: MBA 662 Quantitative Analysis for Business Managers and MBA 631 Management and Organizations and either MBA 642 Economics for Managers or another approved advanced management course
 - Three semester hours in MBA 631 Management and Organizations Managerial Processes and Behavior
 - At least three semester hours in ME 698 Non-Thesis Research, involving design or research
 - At least nine semester hours of engineering-oriented management coursework. Approved courses include:

Requirements		Hours
CE 658	Engineering Management	3
EE 585	Engineering Operations	3
EE 686	Technical Entrepreneurship I	3
EE 687	Technical Entrepreneurship II	3

2. The student must make a presentation on the research project and submit a final report which must be approved by the project director.

Preparatory Courses

Students admitted to the graduate program in mechanical engineering without an undergraduate degree in mechanical engineering or who have not had the courses listed below must take the following courses or present equivalent prior coursework. Additional coursework may be required depending on the courses the student has taken during his/her undergraduate degree and the area of specialization for Masters.

Requirements		Hours
ME 241	Thermodynamics I	3
ME 321	Introduction to Fluid Mechanics	3
ME 322	Introduction to Heat Transfer	3
ME 360	Introduction to Mechatronic Systems Engineering	3
ME 370	Kinematics and Dynamics of Machinery	3

ME 371	Machine Design	4
CE 220	Mechanics of Solids	3

Additional Information

Deadline for Entry Term(s):	Fall: July 1, Spring: November 1, Summer: April 1
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE General Test (TOEFL is also required for international applicants whose native language is not English.)

For detailed information, contact Dr. David Littlefield, Department of Mechanical Engineering, BEC 257, 1720 2nd Avenue South, Birmingham, Alabama 35294-4461.

Telephone: 205-934-8460

E-mail: littlefield@uab.edu

Web: <http://www.uab.edu/engineering/home/departments-research/me/graduate>

Grad School of Health Professions

Dean: Dr. Harold P. Jones

The School of Health Professions delivers educational programs to prepare health personnel who will improve the services in health care and the systems through which these services are provided. In keeping with the mission of the University of Alabama at Birmingham, the resources and programs of the school are dedicated to excellence in teaching, research, and scholarly activity and to service to the institution, the community, and the professions represented by programs of the school.

Degree options in the School of Health Professions include bachelor's, master's, and doctoral programs sponsored by five academic departments – Clinical and Diagnostic Sciences, Health Services Administration, Nutrition Sciences, Occupational Therapy, and Physical Therapy. In addition, certificate options are available in some specialized areas.

The School of Health Professions provides the professional phase (upper division coursework) for the following programs leading to a Bachelor of Science degree: biomedical sciences, health care management, medical technology, and nuclear medicine technology. The pre-professional phase of these programs may be completed by taking the prescribed coursework at UAB or any other accredited university or college. All eligible undergraduate programs have been continuously accredited since their inception by the appropriate professional accrediting bodies.

At the graduate level, the School of Health Professions offers Doctor of Philosophy degree programs in administration/health services (offered jointly with the UAB School of Business), nutrition sciences, and rehabilitation sciences; Doctor of Science in administration/health services; Doctor of Physical Therapy; and Master of Science degree programs in biotechnology, clinical laboratory sciences, nutrition sciences, genetic counseling, health administration, health informatics, occupational therapy, and physician assistant studies. Post-baccalaureate certificates are also offered in dietetics (internship), health-focused patient/client management for physical and occupational therapists, health care quality and safety, and low vision rehabilitation.

The School of Health Professions is committed to the practice of ethical standards of conduct. School policies, procedures, and regulations reflect this commitment and are in compliance with those of the University of Alabama at Birmingham. To ensure continued practice of ethical standards, the administration and the standing committees of the school (Faculty Affairs, Academic Affairs) regularly review school policies and procedures. All research endeavors are in compliance with policies of the UAB Institutional Review Board.

SHP Admissions

Entrance requirements for the individual educational programs of SHP vary. Persons desiring admission to a particular program should consult the appropriate section of the University Catalogs for specific entrance requirements, application process, and program information. Students who attend an institution other than UAB are encouraged to seek academic advisement from the SHP Office of Student Success as early as possible to plan for completion of program prerequisites.

The School of Health Professions welcomes applications from all individuals who are prepared for the programs offered. All applicants must offer acceptable evidence of ability and intent to meet the academic standards specified by the particular program into which admission is desired. In addition, certain immunizations are required prior to enrollment. For specific requirements, see the UAB Student Health and Insurance Programs and UAB Immunization Policy. If accepted into a SHP program, students must complete a background check and drug screen upon admission and again prior to clinical placement. Applicants are considered regardless of race, color, religion, sex, sexual orientation, national origin, disability unrelated to program performance, disabled veteran status, or Vietnam era veteran status (see UAB Equal Opportunity Policy). Persons who have not yet decided upon a specific health career may obtain information from the:

SHP Office of Student Success
School of Health Professions Building
Room 230
1705 University Boulevard
telephone: (205) 934-4195

Interdisciplinary Programs

The School of Health Professions offers two graduate level interdisciplinary programs. The Graduate Certificate in Health-Focused Patient/Client Management for Physical and Occupational Therapists is designed to prepare PTs and OTs for expanding roles in the areas of prevention, health promotion, and wellness. Health Focused Patient/Client Management is the integration of health promotion and education methods in OT and PT practice to create a holistic approach to enhance patient/client wellness and quality of life.

The Ph.D. in Rehabilitation Sciences is an interdisciplinary program sponsored by the Department of Occupational Therapy and the Department of Physical Therapy within the School of Health Professions. This program is designed to prepare graduates to become academicians, scholars, scientists and researchers in education, health care, industry, and government institutions as well as consultants to individuals, communities, and governments. The aim of this program is to prepare candidates to become leaders in teaching and research within the field of Rehabilitation Science. However, this is not a clinical training program. Applicants planning to become occupational therapists or physical therapists should look at the graduate catalog entries for these two professions.

Health Focused Patient/Client Management for Physical and Occupational Therapists

Contact Information

Program Coordinator:	Cecilia Graham, PT, PhD
E-mail:	cgraham@uab.edu
Phone:	205 - 934 - 5949
Fax:	205 - 975 - 7787
Web site:	www.uab.edu/ptotcert

Mailing address:

The University of Alabama at Birmingham

Department of Physical Therapy
1720 2nd Avenue South
SHPB 337
Birmingham, AL 35294-1212

Program Information

The UAB Graduate Certificate in Health Focused Patient/Client Management for Physical and Occupational Therapists is designed to prepare PTs and OTs for expanding roles in the areas of prevention, health promotion, and wellness. Health Focused Patient/Client Management is the integration of health promotion and education methods in OT and PT practice to create a holistic approach to enhance patient/client wellness and quality of life. The ultimate goal of the certificate is to enable graduates to develop and implement clinical and community programs to address lifestyle and behavior factors that underlie many chronic diseases. Emphasis will be placed on program development for persons with disabilities. The concepts addressed in the certificate program are applicable across the patient/client lifespan and in a variety of practice settings.

PTC 780. Hlth Focused Care in PT & OT. 3 Hours.

Overview of health promotion principles and health behavior theories as applied in contemporary health care, especially in rehabilitation services. Evidence is presented for the most prevalent preventable chronic diseases/conditions and the health behaviors that contribute to these conditions.

PTC 781. Health Focused Patient/Client Communication and Advocacy. 3 Hours.

Communication and advocacy strategies to effect behavior change at the individual and community level; application of evidence-based and best practice methods/techniques that empower individuals and community to change health-related behaviors.

PTC 782. Health Focused Patient/Client Management I. 3 Hours.

Application of evidence-based and best practice methods/techniques for physical activity/fitness, weight management, and nutrition optimization using a health focused care model.

PTC 783. Health Focused Patient/Client Management II. 3 Hours.

Examines how occupational and physical therapists address smoking cessation, alcohol moderation, sleep health, and stress management using a health focused care model for individuals and community groups. Issues addressed include screening, best practices for interventions, patient education resources, and consultation/referral sources to optimize health outcomes.

PTC 784. Health Focused Care - Synthesis Project. 3 Hours.

Synthesis of content from previous certificate courses to develop a health focused program in the clinical or community setting.

Credentials Conferred

The Graduate Certificate in Health Focused Patient/Client Management for Physical and Occupational Therapists is awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 5 semesters to complete; students take 1 course per semester.

Program Entrance Date

Students may begin the program in the spring, summer or fall term.

Admission Requirements

Admissions requirements include completion of a degree in physical or occupational therapy and current licensure as a physical or occupational therapist in the United States or foreign equivalent. Students from countries where English is not the official and primary language must also take and receive an acceptable score on the TOEFL or IELTS.

Degree Requirements

15 credit hours (5 required courses)

Rehabilitation Sciences

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.
Director:	Dr. David Brown
Phone:	(205) 934-3566
E-mail:	dbrownpt@uab.edu
Web site:	http://www.uab.edu/rspdh

Program Information

Ph.D. in Rehabilitation Science

The Ph.D. in Rehabilitation Science program is an interdisciplinary program offered by The Department of Occupational Therapy and The Department of Physical Therapy at the School of Health Professions. This exciting program is designed to prepare graduates to become*:

- Academicians, scholars, scientists and researchers in education, health care, industry, and government institutions.
- Consultants to individuals, communities, and governments.

The goal of the Program is to prepare graduates to have the following skills:

- Design and implement research studies that will contribute to the knowledge base of rehabilitation science.
- Design and deliver educational courses related to rehabilitation.
- Translate innovative rehabilitation research findings into practice so as to advance the field of rehabilitation science.

* The aim of this program is to prepare candidates to become leaders in teaching and research within the field of Rehabilitation Science. However, this is not a clinical training program. Applicants planning to become occupational therapists or physical therapists should visit the following websites to pursuit training in these two professions: www.uab.edu/ot or www.uab.edu/pt.

Application Procedure

Received by UAB Graduate School

LHL G03
1720 2nd Avenue South
Birmingham, Alabama 35294-0013

- Complete and submit online Graduate School application
- Submit application fee payment - Domestic: \$45.00

- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School
- Three (3) letters of recommendation are required. Please ask the individuals from whom you request references to submit them online via the Apply Yourself system. Electronic submission is the preferred method. However, if your referees prefer to mail a recommendation letter, it should be mailed to the address of the department or program to which you are applying.

Minimum Requirements for Admission

- Note that each application will be reviewed by the Admission Committee to identify individuals with strong commitment and aptitude to perform research related to Rehabilitation Science, along with strong academic preparation and professional-leadership potential.
- Undergraduate or graduate degree in occupational or physical therapy, engineering, exercise science, neuroscience, medicine, nursing, or other health related professions.
- Recommended minimum Graduate Record Exam (GRE) score of 50th percentile for all categories.
- Recommended minimum GPA 3.0/4.0 in all previous coursework
- Three strong evaluation references, with at least one from a research lab mentor, and one from an academic source.
- With the written essay, provide evidence of appropriate goals of study, professional growth and commitment to research, with special emphasis on interest in research that is being conducted at UAB.
- Interview with faculty that shows passion and commitment to research and professional growth in Rehabilitation Science.

For further information contact:

David Brown, PT, Ph.D.

Department of Physical Therapy

205-934-3566

dbrownpt@uab.edu This e-mail address is being protected from spambots. You need JavaScript enabled to view it.

Clinical and Diagnostic Sciences

The Department of Clinical and Diagnostic Sciences is comprised of academic programs essential to today's healthcare system. Our programs provide training for future health care professionals in a variety of disciplines ranging from the diagnosis of illness and disease, the administration of advanced treatment therapies, to the performance of vital roles in surgical suites and in outpatient and inpatient healthcare settings. Graduates of our programs are well poised for a wide variety of job opportunities due to the outstanding education received at UAB. Current graduate program offerings include:

Biotechnology, M.S.

Clinical Laboratory Science, M.S.

Genetic Counseling, M.S.

Physician Assistant Studies, M.S.P.A.S.

Biotechnology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.
Program Director:	Kathy Nugent, PhD
Phone:	(205) 934-7384
E-mail:	knugent@uab.edu
Web site:	http://www.uab.edu/shp/cds/academic/graduate/biotech

Program Information

Program Mission

The faculty members of the Biotechnology Program are devoted to providing excellent service to the community and its graduates. The faculty, in its concern for the health and safety of the general public, is committed to ensuring that each student develops knowledge, skills, and values essential to the appropriate role providing the basis for continuing intellectual and professional growth.

Out of a great concern for applied technology and the role that it plays in the diagnosis, management and treatment of human disease, and in developing products to solve problems for present and future generations, the Program is designed to provide instruction through didactic and practical training in order to ensure that its graduates possess the critical knowledge and skill sets that are required for intellectual and professional growth in the future.

Biotechnology

The goal of the Master's degree program is to provide a more direct route to a career in biotechnology by focusing on mastering current techniques used in biotechnology coupled with the business fundamentals necessary for successful product/technology development in the industry. The multi-disciplinary aspects of this program will broaden and expand the knowledge base of students, thus making graduates particularly useful to potential industry employers. According to the U.S. Department of Labor Occupational Outlook Handbook, 2010, the demand in the biotechnology field continues to drive job growth, with much higher expected increases in career opportunities to be realized as compared to all other industries for the next several years (Batelle, 2012).

The Biotechnology Program is a Master of Science degree that requires 3 semesters for completion as full-time students. The Master of Science requires 36 credit hours and is designed for individuals who hold a Bachelor of Science or Bachelor of Arts degree in a related discipline including biology, chemistry, biochemistry, physics, engineering, mathematics, psychology and sociology.

M.S. Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a biology, chemistry, or a related major from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A = 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,
- Have scores of at least 153 on the verbal and a 144 on the quantitative sections of the Revised GRE.,
- Provide a written statement of career goals,
- Complete an interview with the program admissions committee, and
- If foreign-educated, have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL,

submit a transcript evaluation from World Education Services (WES) at www.wes.org

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. Accepted students must complete a background check and drug screen at admission and prior to placement in clinical internships by school policy.

Essential Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program are available upon request from the Biotechnology program office. If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit <https://www.uab.edu/students/services/disability-support-services>.

Additional Information

Entry Term	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	July 1st
Number of Evaluation Forms Required:	None
Entrance Tests:	GRE and for international applicants from non- English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English(TWE)
Comments:	Financial aid (fellowship, stipend or assistantship) is not available from the program; scholarship availability is limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Biotechnology Program, UAB School of Health Professions, SHPB 430, 1705 University Blvd., Birmingham, Alabama 35294-1212.

Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Clinical Laboratory Sciences

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degrees Offered:	M.S.
Director:	Dr. Janelle M. Chiasera
Phone:	(205) 975-3111
E-mail:	chiasera@uab.edu
Web sites:	http://www.uab.edu/shp/cds/academic/graduate/cls

Program Information

Program Mission

The Faculty of the Clinical Laboratory Sciences program is committed to service to the community and to providing high quality education to prepare students with a solid educational background and a set of skills translatable to a variety of laboratory settings including hospital laboratories, industry, research laboratories, and many more. The Faculty, in its concern for the health and safety of the general public, is committed to ensuring that each student develops knowledge, skills and values essential to the appropriate role providing the basis for continuing intellectual and professional growth.

M.S. Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a biology, chemistry, or a related major from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A = 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,
- Have taken the GRE General Test,
- Provide a written statement of career goals,
- If foreign-educated, have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, submit a transcript evaluation from World Education Services (WES) at www.wes.org

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission and prior to clinical placement. Persons with a Bachelor of Science degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree student does not constitute admission to the M.S. degree program.

Essential Functions

Essential functions are fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program. A full list of the essential functions of the program are available from the CLS website under the link *Admission Requirements* (<http://www.uab.edu/shp/cds/academic/graduate/cls>). Essential functions are physical abilities, mental abilities, skills, attitudes, and behaviors the students must evidence or perform at each stage of their education. The absence of an essential function would fundamentally alter a student's ability to meet the program goals. The essential requirements include categories of observation, movement, communication, intellect, and behavior.

If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit the DSS offices at 1701 9th Avenue South. Additional information is available at <https://www.uab.edu/students/services/disability-support-services>.

Accreditation and Certification

The program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences. Program graduates are eligible to apply for the certification examination offered by the American Society of Clinical Pathology Board of Certification (ASCP-BOC).

NAACLS

5600 N River Road, Suite 720
Rosemont, IL 60018-5119
Phone: 847.939.3597
Fax: 773.714.8886
URL: <http://www.naacls.org/>

ASCP Board of Certification

33 West Monroe Street, Suite 1600
Chicago, IL 60603
Phone: 312.541.4999
Fax: 312.541.4998
Email: info@ascp.org
URL: <http://www.ascp.org/>

Additional Information:

Entry Term:	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	Early Admission: February 1; Regular Admission: April 1
Entrance Tests:	GRE and for international applicants from non-English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE)
Comments:	Scholarship money is available, but is limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Clinical Laboratory Sciences Program, UAB School of Health Professions, SHPB 430, 1705 University Blvd., Birmingham, Alabama 35294-1212.
Telephone 205-934-3209.
E-mail AskCDS@uab.edu

Genetic Counseling

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.
Interim Program Director:	Christina Hurst
Phone:	(205) 934-7299
E-mail:	cbhurst@uab.edu
Web site:	www.uab.edu/msgc

M.S. Program in Genetic Counseling

Accreditation:

The Genetic Counseling Program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC). The program received full accreditation in 2013 and will apply for re-accreditation in 2019. Fully accredited programs must complete a rigorous process to demonstrate that the program is capable of meeting the criteria for a genetic counseling training program as established by ACGC. Programs that successfully complete this process are awarded full accreditation. All students that graduate from an accredited program may apply for board certification and licensure as a genetic counselor.

Admission Requirements

- Baccalaureate degree from a regionally-accredited college/university
- Graduate Record Examination (GRE) General Test scores from the Verbal, Quantitative and Analytic sections. Applicants with advanced degrees whose GRE scores are older than 5 years (the time limit that ETS will send scores) can send reports from previously attended graduate programs.
- A minimum cumulative undergraduate grade point average of at least 3.0 (A = 4.0)
- A minimum GPA of 3.0 in natural science courses
- A minimum cumulative grade point average of 3.0 in the program prerequisite courses, with a minimum grade of C in each (prerequisite courses are listed below)
- Resume or CV: This should include academic qualifications, a description and timeline of any paid or volunteer work experience in crisis counseling or peer counseling setting, working with individuals with genetic conditions or disabilities, technical work in laboratories, research, or teaching experience, and any other relevant information.
- A personal statement (no more than 500 words) highlighting your motivation to become a genetic counselor, and emphasizing your prior and current experiences and how they will benefit you in the profession.
- Paid or volunteer experience in a crisis counseling setting, peer counseling setting, working with individuals with genetic conditions or disabilities, technical work in genetics laboratories, research, or teaching experience in biology or genetics is recommended and encouraged in preparation for entering the genetic counseling field.
- Interview with UAB faculty
- Three letters of recommendation
- Satisfactory screening on health data questionnaire by the UAB Medical Center Student Health Service.
- Complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy.
- The following course prerequisites:
 - o 4 semester hours of biology I (with lab)
 - o 4 semester hours of biology II (with lab)
 - o 3-4 semester hours of biochemistry
 - o 3-4 semester hours of genetics
 - o 3 semester hours of statistics (upper level, population, and/or health-related)
 - o 3-4 semester hours of psychology (general, developmental, or abnormal)

Degree Requirements

The graduate program in genetic counseling will follow the Plan II (non-thesis) option.

Program Curriculum

First Year

First Term	Hours
GC 501	3
GC 510	3
GC 560	1
GC 725	3
CDS 610	3
ECG 621	3
	16

Total credit hours: 16

First Year

Second Term	Hours
GC 504	3
GC 505	3
GC 506	3
GC 560	1
CDS 625	3
ECG 628	3
	16

Total credit hours: 16

First Year

Summer Term	Hours
GC 650	2
GC 651	5
	7

Total credit hours: 7

Second Year

First Term	Hours
GC 560	1
GC 600	2
GC 652	2
GC 653	2
GC 698	2
CDS 500	1
	10

Total credit hours: 10

Second Year

Second Term	Hours
GC 560	1
GC 602	2
GC 654	2
GC 655	2
GC 698	2
CDS 605	1
	10

Total credit hours: 10

Additional Information

Deadline for Entry Term(s):	January 15
Deadline for All Application	January 15
Materials to be in the Graduate School Office:	
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Program Director, Graduate Program in Genetic Counseling, UAB School of Health Professions, 1705 University Boulevard, SHPB 444, Birmingham, AL 35294-1212.

Telephone 205-975-4CDS (205-975-4237)

E-mail <mailto:AskCDS@uab.edu> (AskCDS@uab.edu)

Website www.uab.edu/msgc

Physician Assistant Studies

Students should use this checklist to complete the CASPA application. The Physician Assistant program will notify students when it is time to complete the Graduate School application online.

Students should complete this checklist after the CASPA application has been approved and the Physician Assistant program has notified them of admission to the program.

Degree Offered:	M.S.P.A.S.
Program Director:	James R. Kilgore, PhD, PA-C
Phone:	(205) 934-9124
E-mail:	AskCDS@uab.edu
Web site:	www.uab.edu/pa

General Information

Physician Assistants (PAs) are valuable members of a multidisciplinary healthcare team. The profession was established in 1965 to help physicians provide healthcare services to under-served and rural populations. While the profession remains committed to its historical mission, PAs are now employed in almost all medical and surgical specialties.

PAs are healthcare professionals licensed to practice medicine under the supervision of a physician. Individual state practice laws and hospital bylaws define the scope of practice and prescribing authority of physician assistants. In general, most states authorize PAs to prescribe non-controlled substances and perform any task delegated by a supervising physician.

To be eligible for licensure, PAs must graduate from an accredited physician assistant program and pass the Physician Assistant National Certification Examination (PANCE). To maintain licensure, PAs must complete 100 hours of continuing medical education credits every two years and pass the Physician Assistant National Recertification Examination (PANRE) every six years. PAs may obtain additional training through postgraduate residency programs in subspecialty areas, but these programs are not required for licensure or practice in subspecialty areas.

The mission of the UAB Physician Assistant Program is to provide qualified individuals with the knowledge, skills, and judgment needed

to assist physicians in the care of patients in surgical, acute-care, and medical settings. While physician assistants function under the direction of the physicians, they are capable of performing selected tasks autonomously.

Accreditation:

The Physician Assistant Program is accredited by the Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA).

Credentials Conferred:

Diploma—The Master of Science in Physician Assistant Studies (MSPAS) degree is awarded by the University of Alabama at Birmingham.

Professional Certification:

Graduates of the UAB PA program are eligible to take the Physician Assistant National Certifying Examination (PANCE) sponsored by the National Commission on Certification of Physician Assistants to become a certified PA.

Essential Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the academic and clinical requirements of the program and to satisfy licensure/certification requirements have been outlined and are available upon request from the academic program office. Students requesting disability accommodations should contact UAB Disability Support Services (DSS) at 205-934-4205.

Program Curriculum:

Course requirements are listed below with semester credit hours shown.

Didactic Curriculum

First Year

First Term	Hours
PA 601	4
PA 602	4
PA 605	3
PA 610	3
PA 615	1
	15

Total credit hours: 15

First Year

Second Term	Hours
PA 603	3
PA 606	4
PA 608	3
PA 611	2-3
PA 613	3
PA 616	1
	16-17

Total credit hours: 16-17

First Year

Summer Term	Hours
AHS 530 or HCM 530	3
PA 604	3

PA 614	2
PA 618	1
PA 619	3
CDS 535	1
	13

Total credit hours: 13

Second Year

First Term	Hours
PA 607	6
PA 609	3
PA 612	3
PA 617	2
PA 620	2
PA 634	1
	17

Total credit hours: 17

Clinical Curriculum

The clinical component of the curriculum consists of 9 clinical rotations PA 621 – PA 629 (5 credits each) plus Senior Seminar I, II & III, and a Master's Research Project Presentation. Of the clinical rotations, 7 are required and 2 are electives.

Second Year

Second Term	Hours
PA 621	4-5
PA 622	4-5
PA 623	4-5
PA 638	3
	15-18

Total credit hours: 15-18

Second Year

Summer Term	Hours
PA 624	4-5
PA 625	4-5
PA 626	4-5
PA 639	3
	15-18

Total credit hours: 15-18

Third Year

First Term	Hours
PA 627	4-5
PA 628	4-5
PA 629	4-5
PA 640	2
PA 698	1
	15-18

Total credit hours: 15-18

Clinical Rotations (PA 621- PA 629)

9 Required Clinical Rotations

Elective Clinical Rotations:

Emergency Medicine

Family Medicine

Intensive Care Units

Requirements	Hours
PA 621 Clinical Services I	4
PA 622 Clinical Services II	4
PA 623 Clinical Service III	4
PA 624 Clinical Services IV	4
PA 625 Clinical Services V	4
PA 626 Clinical Service VI	4
PA 627 Clinical Service VII	4
PA 628 Clinical Service VIII	4
PA 629 Clinical Service IX	4

• Requirements	Hours
BY 115 Human Anatomy	4
BY 116 Introductory Human Physiology	4
or BY 409 Principles of Human Physiology	
BY 123 Introductory Biology I	4
BY 124 Introductory Biology II	4
BY 261 Introduction to Microbiology	4
or BY 271 Biology of Microorganisms	
CH 115 General Chemistry I	8
& CH 116 and General Chemistry I Laboratory	
& CH 117 and General Chemistry II	
& CH 118 and General Chemistry II Laboratory (CH 105, CH 106, CH 107, CH 108 accepted)	
PY 216 Elementary Statistical Methods	4
AHS 360 Statistics for Healthcare Managers (AHS 360 preferred, MA 180 accepted)	3
or MA 180 Introduction to Statistics	
PY 101 Introduction to Psychology	3
or PY 201 Honors Introduction to Psychology	
PY 212 Developmental Psychology	3
PY 218 Abnormal Psychology	3

Class Cohort	Verbal GRE	Quant. GRE	Analyt. GRE	Science GPA	Overall GPA
2012-2014	495	650	3.9	3.54	3.61
2011-2013	473	619	4.0	3.61	3.62
2010-2012	495	633	4.1	3.52	3.55
2009-2011	499	638	n/a	3.55	3.58
2008-2010	484	619	n/a	3.53	3.56
2007-2009	497	631	4.0	3.51	3.46
2006-2008	482	603	n/a	3.53	3.45
Averages	489	628	4.0	3.54	3.55

Deadline for All Application Materials to be received by the CASPA: Completed applications must be received by the Central Application Service for Physician Assistants (CASPA) no later than September 1 the year prior to the expected term of enrollment

Number of Evaluations/ Letter of Recommendations Required: Three

Entrance Tests: GRE (TOEFL is required for international applicants whose native language is not English.)

Health Services Administration

The Department of Health Services Administration includes programs at baccalaureate, masters, and doctoral levels, as well as a variety of professional education opportunities for health services executives and clinicians. Some programs in the department are the only one of their kind in the state, or first of their kind in the nation. The MSHA Program is ranked #5 in the nation.

Certificate in Healthcare Quality and Safety

The Graduate Certificate in Healthcare Quality and Safety is a unique, multidisciplinary approach to the analysis and solution of complex problems. The program prepares clinical and administrative professionals to deploy quality- and safety-focused strategies for their organization. HQS is a high quality, academically rigorous forum for developing the individual knowledge and skills needed to conduct clinical practice and non-clinical process improvement projects in a complex medical environment.

The certificate program, housed in the Department of Health Services Administration in the School of Health Professions, requires a combined approach using data and models from the natural, social, technological, behavioral and life sciences, and other specialized fields. The curriculum is delivered by an interdisciplinary team of faculty from the University of Alabama at Birmingham Schools of Health Professions, Nursing, Public Health and Medicine.

Requirements	Hours
HQS 600 Introduction to Clinical Quality Improvement	4
HQS 610 Quantitative Methods, Measurement, and Tools for Quality Improvement	4
HQS 625 Fundamentals of Patient Safety	4
HQS 630 Leadership of High Reliability Healthcare Organizations	3

Administration Health Services

Prospective students should use this checklist (Ph.D.) to obtain specific admissions requirements on how to apply to the Graduate School.

Prospective students should use this checklist (D.Sc.) to obtain specific admissions requirements on how to apply to the Graduate School.

Degrees Offered:	D.Sc., Ph.D.
Co-Director:	Dr. Robert Hernandez (School of Health Professions)
Co-Director:	Dr. Susan K. Key (School of Business)
Phone:	(205) 934-3113
E-mail:	phdha@uab.edu
Web site:	http://www.uab.edu/shp/home/about-shp (School of Health Professions)
Web site:	http://www.uab.edu/business/ (School of Business)

Program Information

The Ph.D. program in Administration–Health Services is a degree program offered jointly and cooperatively by the Department of Health Services Administration in the School of Health Professions and the Graduate School of Management in the School of Business. Faculty associated with the School of Public Health, School of Medicine, Lister Hill Center for Health Policy, Center for Outcomes and Effectiveness Research and Education, and Center on Aging also contribute to student learning.

The Ph.D. program is for those who wish to pursue the conceptual, philosophical, and applied aspects of administrative processes in health services, health policy, and outcomes research in health care. It provides doctoral-level study and research in administration with specific application to health services. The pedagogical focus is on developing a strong research orientation through course work, research seminars, and mentoring relationships with faculty. Students may choose a specialization in either strategic management or health services research. Students who are interested in pursuing academic careers are also afforded the opportunity to develop their teaching skills through course work and teaching opportunities. Job placement occurs in regional, national, and international markets. To date, over 80 graduates have taken positions in academic institutions as well as health service delivery, governmental, and consulting organizations.

Admission Requirements

An applicant should already possess a master's degree in a relevant discipline or have completed an undergraduate program with an outstanding record. Completed applications of well-qualified candidates received by January 15 may be considered for early admission. The application deadline is March 1st. Although applications may be considered after March 1st, admission and financial aid priority is given to those applicants whose materials are complete by March 1st. Applications submitted after March 1st would be considered on a space-available basis only.

Admission recommendations are made by the Admissions and Policy Committee after examination of the candidate's qualifications, which should include a minimum GRE General Test score of 1,000 (verbal plus quantitative), if tested prior to August 2011; equivalent combined scores for the revised GRE; or a GMAT test score of 550. All applicants whose first language is not English are also required to submit a score for the Test of English as a Foreign Language (TOEFL). A TOEFL score of 80 is required if the TOEFL taken is based on the Internet version; if computer-based, the minimum score required is 213; and if the paper-based test version is taken, the minimum acceptable score is 550 or above. Consideration will also be given to the quality of the applicant's academic record, previous research experience and productivity, and estimated research potential as indicated by references.

Various forms of financial aid are available to students. Departmental research assistantships are awarded on a competitive basis and carry an obligation of 20 hours of work per week. Assistantships are awarded to incoming students for a period of one year, and may be renewable for a second year based on satisfactory work and academic progress, depending on the availability of funds. Some students are able to secure funding for additional years in the program through research assistant positions or other part-time jobs funded by faculty members' grants and contract activities. Other forms of financial assistance include minority fellowships offered through the UAB Graduate School, paid teaching

opportunities in selected undergraduate programs, and federal student loans.

Prerequisites

Prerequisite requirements include one graduate-level statistics course with computer usage, one graduate-level course on the U.S. health care system, and an introductory healthcare finance course. Incoming students who have not met these prerequisites during a master's program may take courses prior to entering the program or during their first year of study in the program.

Program of Study

The program of study consists of five components

1. Courses in administration and health systems,
2. Courses in research methodology and statistics,
3. Specialization courses,
4. Comprehensive examinations,
5. The doctoral dissertation.

Specializations are currently available in strategic management and health services research. Students must complete all coursework in the first three areas and pass a comprehensive examination in each before work can officially begin on the dissertation. The investigation and other special work leading to the dissertation must be performed directly under the guidance and supervision of a five-person committee of the UAB graduate faculty. The normal minimum period in which the doctoral degree can be earned is three to four years of full-time study.

Degree Completion

The granting of the Ph.D. degree is based on completion of all required coursework, residency requirements, comprehensive examinations, dissertation requirements, and the recommendation of the Administration–Health Services graduate program director and the dissertation committee.

Mission, Vision, and Values Statements

Because outstanding teaching and research are essential to the future of health care delivery in our nation and abroad, the Ph.D. program in Administration–Health Services provides doctoral-level training to individuals who will be our future health care leaders in academic and nonacademic research organizations.

We seek to recruit a diverse and talented group of national and international students who are attracted to careers in research and teaching. The educational experience in the Ph.D. program is characterized by exposure to the various disciplines relevant to health administration and policy from across the university, as well as one-on-one mentorship relationships with faculty. These experiences are expected to serve as a foundation for future research throughout the graduate careers.

Additional Information

Deadline for Entry Term(s):	January 15th
Deadline for All Application Materials to be in the Graduate School Office:	March 15th
Number of Evaluation Forms Required:	Three

Entrance Tests:	GRE or GMAT (TOEFL also required for international applicants whose native language is not English.)
Comments:	Stipend support available

For detailed information, contact the Program Office of the Doctoral Programs in Administration–Health Services, UAB School of Health Professions Building, 1705 University Boulevard, Birmingham, AL 35294-1212.
 Telephone 205-934-3113
 Fax 205-975-6608
 E-mail phdha@uab.edu
 Web www.hsa.uab.edu

Health Administration

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.H.A.
Residential and Executive M.S.H.A. Director:	Mrs. Randa Hall (Residential & Executive)
Phone:	(205) 934-3332
E-mail:	randahall@uab.edu
Web site:	www.uab.edu/msha

Program Information

The Master of Science in Health Administration (MSHA) Program, accredited by the Commission on Accreditation of Healthcare Management Education, trains executives for health services organizations. The program has graduated more than 1,300 persons since 1965.

Students must complete 23 graduate courses and a 12-month administrative residency in a health care organization. A capstone core course is completed during the last on-campus semester. Twenty-one core courses and two elective courses are required as well as a summer internship or international experience for single-degree MSHA students. All students begin in the fall term and complete coursework in 21 months followed by the administrative residency.

Complete applications for fall entry are due no later than the preceding March 1. Since admission to the MSHA program is very competitive, early application is encouraged.

MSHA-MBA, MSHA-MSHI Coordinated Degrees

Students wishing to pursue simultaneously the Master of Science in Health Administration (MSHA) and the Master of Business Administration (MBA) degrees must complete 29 graduate courses, including 3 electives. Students seeking to complete the Master of Science in Health Administration (MSHA) and the Master of Science in Health Informatics (MSHI) must complete 27 graduate courses and a summer internship. A 12-month administrative residency in a health services organization is required for completion of the MSHA program. A student who enters a coordinated program, but subsequently decides to pursue only one of the degrees, must satisfy all the requirements for the degree sought.

Application Information

Applicants to the MSHA, MSHA-MBA, or MSHA-MSHI programs must have completed or anticipate completion of at least a baccalaureate degree from a regionally accredited college or university or from a recognized university abroad before entry into the program. Prior to matriculation, MSHA-MBA students must have completed an online MBA boot camp course with a passing grade. In addition, MSHA-MBA students must have successfully completed three semester credit hours in calculus.

Application for the MSHA program should be made using the UAB Graduate School Apply Yourself Application Network Service available at (https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=uab-grad).
 Telephone 205-934-1583
 E-mail parmstrong@uab.edu
 Web www.uab.edu/msha

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	March 1 for first priority and June 1 if space is still available
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (minimum composite score of 300) or GMAT (minimum score of 480) is required for Residential applicants only. TOEFL and TWE are also required for all international applicants whose native language is not English.
Comments:	Additional application for admission is required by program

For detailed information, contact Admissions Coordinator, Department of Health Services Administration, UAB School of Health Professions, SHP6 567, 1720 2nd Avenue South, Birmingham, AL 35294-3361.
 Telephone 205-934-1583
 E-mail parmstrong@uab.edu
 Web www.uab.edu/msha
 or the UAB Graduate School of Management (MBA Program), BEC 203, 1720 2nd Avenue South, Birmingham, Alabama 35294-4460.
 Telephone 205-934-8815
 E-mail cmanning@uab.edu
 Web <http://www.uab.edu/business/>

Executive MSHA Program

Qualified students can earn the Master of Science in Health Administration (MSHA) by completing the executive program. This program is open to those with at least 5 years of experience in health care organizations, either as managers or as clinical professionals. Participants in the Executive MSHA program complete both on-campus and distance-learning activities, and a brief field experience, within 2 years of study.

Additional Information

For detailed information, contact Admissions Coordinator, Department of Health Services Administration, UAB School of Health Professions, SHPB 557, 1720 2nd Avenue South, Birmingham, Alabama 35294-3361. Telephone 205-934-1672
E-mail sarap@uab.edu
Web www.uab.edu/msha (Click on Executive M.S.H.A.)

Health Informatics (M.S.H.I.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.H.I.
Program Director:	Mrs. Amanda Dorsey
Phone:	(205) 934-3509
E-mail:	mshi@uab.edu
Web site:	www.uab.edu/hi

Program Information

Program Admission

Admission to the program is in the fall semester. Application to the program may be made September through April 30, preceding the expected date of enrollment for the next fall term. Applications received after April 30 are considered on a space-available basis. Applications are evaluated against the Graduate School criteria and those criteria developed specifically for the HI program. The ideal size of each entering class is 20 to 25 students.

Admission Requirements

Admission to the program requires acceptance to the Graduate School of The University of Alabama at Birmingham. Applicants must have completed or anticipate completion of at least a baccalaureate degree from a regionally accredited college or university or from a recognized university abroad before entering the program. As a criterion for unconditional admission, applicants must have no less than a B GPA (3.0 on a 4.0 scale) for the last 60 semester hours of earned undergraduate credit or overall undergraduate credit or overall undergraduate hours. Official transcripts of all previous academic work beyond the secondary level should be submitted. Before matriculation, entering students must have received a final transcript for each degree received.

The applicant should include a carefully drafted statement about his or her personal interests, career goals, and relevant background experience and a professional resume. Three **confidential** letters of recommendation from individuals qualified to write concerning your potential success in both a graduate program and in the Health Informatics field must be submitted.

Prior to entering the program, applicants should have completed three hours of undergraduate or graduate course work in statistics and and three hours in programming or a relevant continuing education course in event-driven programming (e.g., Visual Basic, C++, Java, XML, .Net).

Admission to the HI program is determined by an interview process and the consensus of the Admissions Committee. The decision is based on previous academic record, professional recommendations as evidence of ability to perform graduate-level work, and an interview with two

faculty members. The program director reserves the prerogative for final recommendation on admission status to the Graduate School.

Applicants accepted to the program must complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	April 30
Number of Evaluation Forms Required:	Three
Entrance Tests:	(TOEFL and TWE also required for international applicants whose native language is not English.)
Comments:	None

Health Information Management Track

The UAB Health Information Management (HIM) Track is a specialty track that leads to the Master of Science Degree in Health Informatics. This track is designed to provide credentialed HIM practitioners with advanced practice knowledge and skills for new employment opportunities in administrative, educational, and research activities in the rapidly evolving electronic health care environment. Credentialed HIM practitioners who have three or more years of work experience are invited to apply to the MSHI Program.

The curriculum will address the development and implementation of the computer based electronic health record, the use of appropriate clinical classifications, vocabularies, and terminologies, the management of legal and regulatory requirements, and privacy and security oversight for health information encompassing the structured domains of health data management, information technology and systems, and organization and management.

HIM Track students will complete an applied project during the last two semesters of the MSHI program. The goal of the final project is to increase students' awareness of applied research in health information management practice. The project should serve as a meaningful contribution to the implementation of the electronic health record in a variety of health care settings.

Application for accreditation by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) for the HIM Track is pending.

For detailed information, contact Master of Science in Health Informatics Program, UAB School of Health Professions, SHPB 590A. Physical address: 1705 University Blvd. Mailing address: 1720 2nd Avenue South, Birmingham, AL 35294
Telephone 205-934-3509
Fax 205-975-6608
E-mail mshi@uab.edu

Nutrition Sciences

Prospective students should use this checklist (M.S.) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (Ph.D.) to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.
Director:	Dr. Jose Fernandez
Phone:	(205) 934-2029
E-mail:	jose@uab.edu
Web site:	www.uab.edu/nutrition

M.S. Program in Nutrition Sciences

Degree Offered:	M.S.
Director:	Susan B. Miller
Phone:	(205) 934-3223
E-mail:	miller1@uab.edu
Web site:	www.uab.edu/nutrition

The program leading to the Master of Science degree in nutrition sciences is designed to provide training and experience in the treatment and prevention of disease through the science and art of optimal nutritional care. Professionals with backgrounds in the science of nutrition or dietetics will have an opportunity to learn the metabolic and biochemical basis for nutritional care while being involved in direct patient management and in either laboratory or clinical research. Opportunities exist for specialization within clinical subspecialty areas such as pediatrics, children with special health care needs, clinical nutrition research, exercise science, health education, health services administration, community nutrition, and public health.

Admission

The Nutrition Sciences graduate program recommends fall-term entry. Interested students must first obtain admission to the UAB Graduate School. Graduate School admission standards include

1. a B average computed overall, or alternatively computed over the last 60 semester hours of earned credit;
2. evidence of a bachelor's degree from a regionally accredited university or college in the United States ; and
3. a combined score of at least 310 on the verbal and quantitative sections of the GRE General Test. Additionally, eligible students for the dietetic internship or clinical option in the master's degree should be registered dietitians, registration-eligible dietitians, or have a baccalaureate degree from the Accrediting and Credentialing of Education for Nutrition and Dietetics (ACEND) approved Didactic Program in Dietetics. A nutrition research option is offered to non-dietetics students with strong science backgrounds.
4. Complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy. The criminal background check and drug screen are required for the students enrolled in the Dietetic Internship Certificate and Nutrition Sciences, M.S. programs.

Degree Requirements

The graduate program in nutrition sciences offers the option for Plan 1 (thesis/research) or Plan 2 (non-thesis/clinical). Candidates for the M.S. degree, Plan 1, are expected to complete a minimum of 30 hours of graduate-level course work, and submit and defend thesis research that makes a contribution to the knowledge of nutrition sciences. Candidates

for the M.S. degree, Plan 2, must complete a total of 36 hours of graduate-level course work.

Curriculum Core Requirements

Successful completion of the M.S. degree will require completion of a minimum of 20 semester hours in nutrition sciences core courses and additional courses to be selected from departmental offerings. The thesis option (Plan 1) requires completion of 6 semester hours of thesis research and presentation of a thesis. Students completing Plan 2 will require a total of 36 semester hours in nutrition sciences.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Susan B. Miller, Assistant Professor and Interim Director, Graduate Program in Nutrition Sciences and Director, Dietetic Internship, Department of Nutrition Sciences, UAB School of Health Related Professions, Webb Building, Room 449, 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-934-3223
E-mail miller1@uab.edu
Web www.uab.edu/nutrition

Dietetic Internship Certificate

The Dietetic Internship Certificate is accredited by the Accrediting and Credentialing of Education for Nutrition and Dietetics (ACEND) and is designed to prepare entry-level dietitians for careers in a variety of health care, wellness, and food service facilities. Internship appointments are awarded on a competitive basis through a national computer matching process. Dietetic interns must also be admitted to the Graduate School (admission standards are listed under the M.S. in Nutrition Sciences above) and are required to enroll in a full graduate course load each term during the internship.

An onsite internship is offered in Birmingham, and an offsite internship is offered in each of the following cities in Alabama: Huntsville, Mobile, Montgomery, and Birmingham. Upon completion of the internship, the student will be eligible to take the national examination to become a registered dietitian. Interns earn 12 hours of graduate credit, which may be applied toward the requirements for the M.S. in Nutrition Sciences. Students may elect to continue in the M.S. program in Nutrition Sciences to complete requirements for the M.S. degree on a full or part-time basis.

Additional Information

For detailed information, contact Susan Miller, Assistant Professor and Interim Director, Graduate Program in Nutrition Sciences Director and Dietetic Internship, Department of Nutrition Sciences, UAB School of Health Related Professions, Webb Building, Room 441 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-934-3223
E-mail dintr@uab.edu
Web www.uab.edu/nutrition

Ph.D. Program in Nutrition Sciences

The program leading to the Ph.D. in Nutrition Sciences at UAB is designed to provide coursework and research experience that emphasizes the science of nutrition in maintaining the health of individuals and populations and preventing a variety of diseases. The doctoral program combines required and elective didactic coursework in basic sciences and nutrition with research incorporating basic science, clinical applications, and translational research conducted in superb facilities in an outstanding research environment.

Admission

To meet Graduate School and departmental standards, a student must have a combined GRE score of 310, an undergraduate degree with a strong science background, three letters of recommendation based on thorough knowledge of the applicant's background and abilities, and, of great importance, a statement of goals and purpose that delineates the student's motivation and purpose in seeking this degree.

Coursework and Other Requirements

Successful completion of the Ph.D. will require completion of a minimum of 33 semester hours in core courses (encompassing the disciplines of cellular and molecular biology, biochemistry, physiology, nutritional biochemistry, clinical nutrition, and statistics and experimental design) and at least 24 additional graduate semester hours of elective coursework from nutrition and other disciplines; passing a comprehensive written qualifying examination; and defense of a dissertation reporting the results of original scientific research that makes a genuine contribution to the knowledge of nutrition sciences. In fulfilling the latter requirement, a student must author at least three papers that are publishable in peer-reviewed journals.

Core Classes must include:

Requirements	Hours
NTR 701 Advanced Medical Nutrition	3
NTR 718 Nutritional Biochemistry	6
NTR 725 Human Nutr Through Life Cycle	3
NTR 726 Consumer Issues in Nutrition	3
NTR 733 Laboratory Instruments and Methods in Nutrition Research	1-3
NTR 736 Scientific Methods	3
NTR 747 Molecular Biology and Nutrition Sciences	3
NTR 788 Advanced Nutrition Seminar	1
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3

Elective classes:

Requirements	Hours
NTR 604 Principles and Practice of Nutrition Support	3
NTR 722 Recent Advances in Nutrition and Cancer Research	1-3
NTR 750 Body Composition and Energy Metabolism	3
NTR 769 Race, Nutrition and Health	3
NTR 779 Obesity in the 21st Century	3

Additional Information

For detailed information, contact Dr. José R. Fernández, Director of the Ph.D. Program in Nutrition Sciences, Department of Nutrition Sciences, UAB School of Health Professions, Susan Mott Webb Nutrition Sciences Building, Room 449, 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-975-2029
E-mail phdntr@uab.edu
Web www.uab.edu/nutrition

Occupational Therapy

Prospective students should use this checklist (Entry Level) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (Post Professional) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (Low Vision Rehabilitation) to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Master of Science
Director:	Dr. Brian J. Dudgeon
Phone:	(205) 975-6101
Web site:	http://www.uab.edu/shp/ot/

Program Information

The Department of Occupational Therapy at the University of Alabama at Birmingham offers an entry level Master of Science degree in occupational therapy (MSOT) for individuals who hold a baccalaureate degree in a field other than occupational therapy. For individuals without a baccalaureate degree, this curriculum is also offered in conjunction with the undergraduate Health Care Management program as a 3:2 Fast OT option (<http://www.uab.edu/shp/ot/32-fast-ot>).

MSOT Occupational Therapy

The MSOT entry-level, or professional program, is a full-time day program.

Accreditation

The program is fully accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20824-3449; telephone: (301)652-6611 ext 2914.

Credentials Conferred

The Master of Science degree is awarded by the University of Alabama at Birmingham.

Professional Certification

Graduates of the program are eligible to sit for the national occupational therapist certification examination administered by the National Board for Certification in Occupational Therapy (NBCOT); website: www.nbcot.org. After successful completion of the exam, the individual will be an Occupational Therapist, Registered (OTR). Most states require licensure

in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination.

Applicants should be aware that fieldwork placement sites, professional licensing agencies and prospective employers frequently require criminal history disclosures and background checks, although convictions do not necessarily disqualify someone for licensure or employment. Applicants with criminal convictions should recognize that such convictions may impede eventual licensure or employment and that the University of Alabama at Birmingham cannot predict the future decisions of fieldwork sites, licensing agencies, or employers.

Length of Study

Entry level program: Minimum of 7 semesters (2 1/2 years) as a full-time student.

Program Entrance Date

Fall semester of each year a new class is enrolled.

Application Deadline

This program participates in the Occupational Therapy Centralized Application Service (OTCAS); early submission of the application is encouraged. Please consult www.otcas.org for more information regarding specific OTCAS application requirements, procedures, dates, and fees.

International Students

See Occupational Therapy Entry Level Admissions Checklist at the top of the page--In addition to these items:

- Complete and submit UAB Graduate School International application;
- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School; a transcript evaluation from World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org) is required;
- Students from countries where English is not the official and primary language must take and receive an acceptable score on the TOEFL or the IELTS;
- Submit official TOEFL test score: Institution code: 1856 or official IELTS score (provide the Graduate School's mailing address to the testing company/center; and
- Mail Financial affidavit of Support

Requirements for Admission

Selection into the program will be based on the student's academic performance record and aptitude for a career as an occupational therapist, and a group interview. The candidate must satisfy the following requirements:

- Hold a baccalaureate degree in a discipline other than occupational therapy from an accredited college or university; or receive a baccalaureate degree in a discipline other than occupational therapy by the time of enrollment;
- Complete required prerequisite coursework with a grade of "B" or better;
- Have a minimum overall GPA of 3.0 (A = 4.0);
- Have a minimum GPA of 3.0 (A = 4.0) in the natural science coursework;

- Have a minimum GPA of 3.0 (A=4.0) in the last 60 hours of coursework;
- If invited, participate in a group interview with members of the faculty of the Department of Occupational Therapy. The interview is scheduled once the application is received and verified.
- Complete a criminal background check and drug screen at program admission and again prior to placement as required by school policy,

Procedures Following Acceptance

Once accepted, students will be allowed to enroll into the program in the desired entry year only if the following requirements are met:

- Medical clearance requirements posted at www.uab.edu/studenthealth/;
- Application to and acceptance by the Graduate School (online) (<http://www.uab.edu/graduate/online-forms>) including the fee
- Signed Letter of Intent received by the Department of Occupational Therapy; with,
- \$300 nonrefundable deposit to reserve a seat in the program (deposit will be applied to tuition)

Essential Requirements

Prior to enrollment, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination or enhancing the sound system in a classroom). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation contacts Disability Support Services (205) 934-4205 or (205) 934-4248 (TDD) or visit 9th Avenue Office Bldg. 1701 9th Ave., provides appropriate and current documentation substantiating the claimed disability, meets the requirements of a disability as described in the ADA, and identifies the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/dss>)

Essential Tasks

- Students must meet class standards for course completion throughout the curriculum.
- Students must be able to read, write, speak, and understand English at a level consistent with successful course completion and development of positive client-therapist relationships.
- Students must complete readings, assignments, and other activities outside of class hours.
- Students must gather decision-making pieces of information during client assessment activities in class or in the fieldwork setting without the use of an intermediary, such as a classmate, an occupational therapy assistant, or an aide.
- Students must perform intervention activities in class or in the fieldwork setting by direct performance or by instruction and supervision of intermediaries.

- Students must apply critical thinking processes to their work in the classroom and in the fieldwork setting, exercise sound judgment in class and in fieldwork, and follow safety procedures established for each class and fieldwork setting.
- Students must have interpersonal skills as needed for productive classroom discussion, respectful interaction with classmates and faculty, and development of appropriate therapist-client relationships.
- Students must maintain personal appearance and hygiene conducive to classroom and fieldwork settings.
- Students must pass a cardiopulmonary resuscitation course at the health professional level (American Heart Association, Course C) every two years under Alabama guidelines for CPR certification.
- Students must demonstrate appropriate health status prior to enrollment, with annual updates on some items. Requirements are posted at www.uab.edu/studenthealth.
- Students must annually complete OSHA-regulated Bloodborne Pathogen Exposure Training.
- Students must follow standards and policies specified in the Department of Occupational Therapy Student Manual, the Letter of Understanding (contract between university and fieldwork sites), and the Graduate Student Handbook. (See Section IX Fieldwork Experience for ADA issues related to fieldwork)

Program Prerequisites - UAB Equivalents*

(Course requirements are listed in semester credit hours)

Completion of prerequisite coursework within the last 8 years with a grade of "B" or better. No more than two prerequisites may be incomplete at the time of application; however, all courses must be completed by June 1st of the entrance year. Depending on the number and type of outstanding prerequisite courses, you may be accepted into the program early with certain conditions such as a requirement to achieve a grade of B or better in a course.

Have a minimum 3.0 (A=4.0) grade point average (GPA) overall, in the natural science courses, and last 60 semester hours.

Requirements	Hours
Prerequisite Courses Required	
Biology with Lab (UAB Equivalent BY 123+L)	4
Human Anatomy with lab (UAB Equivalent BY 115+L)	4
Human Physiology with lab (UAB Equivalent BY 116+L)	4
Physics (UAB Equivalent PH 201)	3
Abnormal Psychology (UAB Equivalent PY 218)	3
Developmental or Lifespan Psychology (must be birth through death) (UAB Equivalent PY 212)	3
Sociology Elective (UAB Equivalent SOC 101)	3
PY 216 Elementary Statistical Methods or MA 180 Introduction to Statistics	3-4
Anthropology Elective (UAB Equivalent ANTH 101)	3

UAB Entry-level Occupational Therapy Program requires taking the GRE.

Typical Program

(Course requirements are listed in semester credit hours)

First Year	
First Term	Hours
OT 607	3
OT 620	4

OT 667	3-4
OT 675	3
OT 677	3
OT 688	1-2
OT 698	1-6
	18-25

Total credit hours: 18-25

First Year	
Second Term	Hours
OT 605	3
OT 606	3
OT 610	3
OT 623	3
OT 631	4
OT 688	1-2
OT 698	1-6
	18-24

Total credit hours: 18-24

First Year	
Summer Term	Hours
OT 609	3
OT 624	4
OT 632	1
OT 662	4
OT 673	3
OT 688	1-2
OT 698	1-6
	17-23

Total credit hours: 17-23

Second Year	
First Term	Hours
OT 625	4
OT 633	1
OT 661	3
OT 668	4
OT 674	3
OT 688	1-2
OT 698	1-6
	17-23

Total credit hours: 17-23

Second Year	
Second Term	Hours
OT 634	2
OT 653	3
OT 663	2
OT 665	4-5
OT 688	1-2
OT 698	1-6
	13-20

Total credit hours: 13-20

Second Year

Summer Term	Hours
OT 685	10
	10

Total credit hours: 10

Third Year

First Term	Hours
OT 686	10
	10

Total credit hours: 10

A minimum total of six credit hours Master’s Level Non-Thesis Research must be completed to meet graduation requirements.

For further information contact:

UAB, Department of Occupational Therapy
 Recruitment and Admissions Coordinator
 SHPB 353
 1720 2nd Avenue South
 Birmingham, AL 35294-1212
 Telephone 205-934-7323
 E-mail msot@uab.edu
 Web <http://www.uab.edu/shp/ot/>

Postprofessional Degree

Deadline for entry term(s):	Post-professional students may enter at any term. However, admission is restricted to students currently enrolled in the Low Vision Graduate Certificate program or who have previously completed that program.
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Deadline for all application materials to be in the graduate school office:	One semester preceding the expected semester of enrollment.
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Number of evaluation forms required:	Three
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Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
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Comments:	None
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Postprofessional Occupational Therapy Program

The program offers postprofessional education to occupational therapists who wish to learn advanced theoretical, practice, and research skills. Currently one online specialization option exists for the postprofessional – low vision. Students interested in low vision must be accepted into the low vision certificate program prior to applying for the postprofessional master’s degree. The 33- semester hour program for low vision option guides the student through coursework for the areas indicated including theory, specialty practice application, research methodology, and a final project or thesis. Elective coursework from related departments taken prior to admission may be approved for degree requirements; however, you must submit a copy of the course syllabus and the year and semester you took the course before final decisions are made regarding approval. Graduates of the program may use this degree to enter specialized areas of practice, as part of the requirements for specialty

certifications, to assume leadership positions within the profession, or to prepare for doctoral level study.

Credentials Conferred

The Master of Science degree is awarded by the University of Alabama at Birmingham.

Length of Study

Approximately 11 semesters are needed to complete this degree. The low vision option was designed specifically for part-time online students.

Program Entrance Date

Low vision students accepted as post-professional students enter at any time during or after low vision coursework. Students who wait until they have taken some of the low vision courses, must apply prior to completing the low vision coursework in order to use their low vision application and fee. If students choose to apply to the post-professional master’s program after completing the certificate, a new application and fee will be required.

Application Deadline and Procedure

See Occupational Therapy Post-professional Admissions Checklist at the top of this page.

International Students

See Occupational Therapy Post-professional Admissions Checklist at the top of this page, in addition to the items listed below:

UAB Graduate School international application

- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School;
- A transcript evaluation from World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org) is required;
- Students from countries where English is not the official and primary language must take and receive an acceptable score on the TOEFL or IELTS
- Submit official TOEFL test score: (Institution code: 1856) or official IELTS score (provide the Graduate School’s mailing address to the testing company/center.

For the post-professional Master’s Degree, the occupational therapy school attended **must** be approved by the World Federation of Occupational Therapy.

Requirements for Admission

For unconditional acceptance, the student must satisfy the following requirements:

- A baccalaureate degree in occupational therapy from an accredited educational program or the World Federation of Occupation Therapy (WFOT) with a minimum cumulative GPA of 3.0 (A = 4.0) computed over the last 60 hours of course work,
- Eligibility for licensure as an occupational therapist in the United States or country of origin,
- An acceptable score on each section of the GRE general test,
- Completed application for admission to the UAB Graduate School,
- Three letters of reference,

- If accepted, complete the UAB medical requirements posted at www.uab.edu/studenthealth.

Essential Requirements

After acceptance and prior to enrollment into online programs, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination or enhancing the sound system in a classroom). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation contacts Disability Support Services (205) 934-4205 or (205) 934-4248 (TDD) or visit 9th Ave. Office, 1701 9th Ave. S., provides appropriate and current documentation substantiating the claimed disability, meet the requirements of a disability as described in the ADA, and identify the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/dss>).

Essential Tasks

- Students must meet class standards for course completion throughout the curriculum.
- Students must be able to read, write, speak, and understand English at a level consistent with successful course completion.
- Students must complete readings, assignments, and other activities outside of class hours.
- Students must apply critical thinking processes to their work in the classroom and exercise sound judgment in class during online discussions.
- Students must have interpersonal skills as needed for productive classroom discussion, and respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment, with annual updates on some items.
- Students must follow standards and policies specified in the Department of Occupational Therapy Student Handbook, and the University of Alabama at Birmingham Directions Handbook.
- Students must adhere to all policies outlined in the Department of Occupational Therapy Student Handbook which will be displayed in the Resource section of each online course.

Postprofessional curriculum

(Course requirements are listed in semester credit hours)

Students must specify a specialty area prior to entering the program. Your stated area of interest will dictate the coursework required for completion of the post professional master's degree. Required coursework for the Low Vision Rehab Graduate Certificate (15 hours) can be viewed at www.uab.edu/lowvision

Students in both programs need to complete the following courses:

Requirements		Hours
OT 642	Research Design in Occupational Therapy	1-3
OT 643	Data Analysis in Occupational Therapy Research	1-3
OT 644	Project Dissemination - Professional Writing and Presentation	1-3
OT 653	Using the Literature for Evidence Based Practice	3
OT 658	Foundations of Professional Education	4
OT 667	Research Methods	3
OT 692	Special Topics in OT (Elective)	1-3

Electives offered outside of the occupational therapy curriculum in programs at UAB are allowed with the permission of the advisor. Up to 12 hours of coursework taken at other institutions may apply as well but must be approved by the student's advisor and must be completed with a grade of B or better. A copy of the course syllabus is required for approval.

For further information contact:

Laura K. Vogtle, PhD, OTR/L, FAOTA

Program Director

Occupational Therapy Postprofessional Program

UAB School of Health Professions

SHPB-338

1720 2nd Avenue South

Birmingham, AL 35294-1212

Telephone 205-934-3568

E-mail lvogtle@uab.edu

Low Vision Rehabilitation, Graduate Certificate

The Graduate Certificate in Low Vision Rehabilitation is a practice oriented certificate degree program that prepares occupational therapists to provide comprehensive, competent intervention to adults with visual impairment from age related eye diseases and brain injury. The program is designed for occupational therapists already working in low vision rehabilitation; those interested in starting low vision rehabilitation programs; and those just interested in expanding their practice skills. The program's flexible web-based distance format allows occupational therapists across the United States and other English speaking countries to obtain these skills while working full time.

Credentials Conferred

The Graduate Certificate in Low Vision Rehabilitation awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 5 semesters to complete; students take 1 course per semester. Two cohorts of students are admitted each academic year-one for the fall semester and one for the spring semester.

Program Entrance Date

Spring Semester (begins in January) or Fall semester (begins in August)

Requirements for Admission

Degree in occupational therapy from an accredited university program.

Essential Requirements

After acceptance and prior to enrollment into online programs, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as

an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination or enhancing the sound system in a classroom). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation contacts Disability Support Services (205) 934-4205 or (205) 934-4248 (TDD) or visit 1701 9th Ave. S., provides appropriate and current documentation substantiating the claimed disability, meet the requirements of a disability as described in the ADA, and identify the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/dss>).

Essential Tasks

- Students must meet class standards for course completion throughout the curriculum.
- Students must be able to read, write, speak, and understand English at a level consistent with successful course completion and development of positive client-therapist relationships.
- Students must complete readings, assignments, and other activities.
- Students must gather decision-making pieces of information during client assessment activities.
- Students must perform evaluation and intervention activities by direct performance keys.
- Students must apply critical thinking processes to their work in the courses.
- Students must have interpersonal skills as needed for productive discussion, respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment with annual updates on some items. Requirements found at www.uab.edu/studenthealth.
- Students must follow standards and policies specified in the Department of Occupational Therapy Student Handbook, and the University of Alabama at Birmingham Directions Handbook.
- Students must adhere to all policies outlined in the Department of Occupational Therapy Student Handbook which is posted online at <http://www.uab.edu/shp/ot/student-resources>.

Application Deadline and Procedure

See Occupational Therapy Low Vision Rehabilitation Admissions Checklist at the top of the page.

International Students:

See Occupational Therapy Low Vision Rehabilitation Admissions Checklist --In addition to the following items:

- A transcript evaluation from World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org) may be required.
- Students from countries where English is not the official and primary language may be required to take and receive an acceptable score on the TOEFL, or IELTS.

- Submit official TOEFL test score (Institution code: 1856) or official IELTS score (provide the Graduate School's mailing address to the testing company/center)

Typical Program (Course requirements are listed in semester credit hours)

The curriculum is designed with the working occupational therapist in mind. Coursework emphasizes practical application to the clinic. Projects are designed to reinforce learning of application to practice. Materials for completion of the courses can be obtained through the internet and required texts. The student must have consistent access to the internet. A high-speed connection (DSL, cable, satellite) is strongly recommended.

Two Tracks Are Available:

Certificate Only

On completion of the required coursework the student will be awarded a Graduate Certificate in Low Vision Rehabilitation by the University of Alabama at Birmingham and the student's name will appear in the commencement bulletin. A transcript of the coursework taken for the certificate will be available.

The curriculum for the certificate is offered online as web-based distance education for practitioners. Students accepted into the program begin the curriculum in January or August and complete one course per semester. Because one course builds on another, students must take the courses in sequence. The final course requires that the student come to the UAB campus for a 3 day on campus intensive where they will work in small groups with instructors to demonstrate assessment and intervention skills. This is the only time the student is required to come to the UAB campus during the entire curriculum. Based on these requirements, course work for completion of the certificate will require 5 semesters.

Low Vision Rehabilitation Certificate/ Postprofessional Master's Degree Program

Students may choose to make the low vision curriculum the major emphasis of the coursework for the Postprofessional Master's Degree offered by the Department of Occupational Therapy. Students completing the certificate program will only need to complete an additional 12 credits of coursework and 6 credits of research to receive the Postprofessional Master's Degree. Coursework for the Postprofessional degree is also online.

LOW VISION REHABILITATION CURRICULUM

The courses must be completed sequentially in the order listed below.

The list shows the course sequence for both student cohorts—one entering the program in the spring and the other entering in the fall.

Typical OT Curriculum Course Sequence

Requirements		Hours
Fall Cohort		
OT 677	Foundations in Low Vision Rehabilitation I (1st Fall Semester)	3
OT 679	Foundations in Low Vision Rehabilitation II (1st Spring Semester)	3

OT 690	Foundations in Low Vision Rehabilitation III (1st Summer Semester)	3
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OT 689	Foundations in Treatment of Visual Impairment from Brain Injury (2nd Fall Semester)	3
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OPEN students may take the OT 693 or OT 695 elective or a course in the post professional master's program (2nd Spring Semester)

OT 691	Foundations in Low Vision Rehabilitation IV (2nd Summer Semester)	3
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Spring Cohort

OT 677	Foundations in Low Vision Rehabilitation I (1st Spring Semester)	3
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OT 679	Foundations in Low Vision Rehabilitation II (1st Summer Semester)	3
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OT 690	Foundations in Low Vision Rehabilitation III (1st Fall Semester)	3
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OT 689	Foundations in Treatment of Visual Impairment from Brain Injury (2nd Spring Semester)	3
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Students may also take the OT 693 or OT 695 elective

OT 691	Foundations in Low Vision Rehabilitation IV (2nd Summer Semester)	3
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Total Credits 15 credits

For further information contact:

Program Coordinator
Occupational Therapy Low Vision Rehabilitation Certificate Program
UAB School of Health Professions
SHPB 355
1720 2nd Avenue South
Birmingham, AL 35294-1212
Telephone 205-975-6860
E-mail Ivrcert@uab.edu
Web <http://www.uab.edu/shp/ot/low-vision-rehabilitation-graduate-certificate>

Physical Therapy

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	D.P.T.
Interim Director (D.P.T.):	Dr. Diane Clarke
Phone:	(205) 934-3566
Web site:	www.uab.edu/pt

Program Information

The Doctor of Physical Therapy program is a course of study for students who hold baccalaureate degrees in fields of study other than Physical Therapy. Completion of the program after nine semesters leads to a Doctor of Physical Therapy (DPT) degree and serves as initial preparation for practice as a physical therapist.

Doctor of Physical Therapy (D.P.T.)

Physical therapists provide services to patient/clients who have body structure and function impairments, activity limitations, participation restrictions, or changes in physical function and health status resulting from injury, disease, and other causes. Physical therapists also address risk and provide prevention services and promote health, wellness, and fitness. Physical therapists interact and practice in collaboration with a variety of professionals. Physical therapists also function in consultative,

education, administrative and supervisory roles in many different types of practice, research, and education settings.

Accreditation: The program is accredited by the Commission on Accreditation in Physical Therapy Education.

Credentials Conferred: The Doctor of Physical Therapy degree is awarded by the University of Alabama at Birmingham.

License : Graduates are eligible for the physical therapist licensure examination. Note that state law regulates the practice of Physical Therapy; contact a specific state's Board of Licensure for Physical Therapy to obtain information on that state's eligibility requirements. <http://www.fsbpt.org/LicensingAuthorities/index.asp>

Length of Study: Nine semesters.

Program Entrance Date: Spring semester.

Application Procedure: This program participates in the Physical Therapist Centralized Application Service (PTCAS). Please consult www.ptcas.org for more information regarding specific PTCAS application requirements, procedures and fees. The PTCAS application needs to be completed by the PTCAS deadline for the class beginning January, 2015. Applicants should send all application materials including GRE scores (use code 7801) directly to PTCAS. PTCAS will verify the application information and send completed applications to the program.

Requirements for Admission: The applicant must hold a baccalaureate degree from an accredited college or university within the United States in a field other than physical therapy. Acceptance will be based on the student's academic ability and aptitude for a career as a physical therapist. The candidate is expected to satisfy the following requirements:

- Complete the PTCAS application based on the PTCAS deadline.
- 75% of prerequisite courses must be completed by the end of the fall semester of the year of application.
- Complete at least 40 hours of documented observation of physical therapy. Various settings are recommended. Documentation should be submitted to PTCAS.
- Submit three letters of recommendation to PTCAS.
- Letters 1 and 2: Written by a physical therapist who has interacted with the applicant for at least 20 hours in a clinical setting.
- Letter 3. Written by a professor with whom the applicant had significant interaction in an academic setting.
- Complete the GRE and have scores sent to PTCAS (code 7801).
- Have a minimum 3.0 (A=4.0) overall, prerequisites, and last 60 semester hours grade point averages. For prerequisite courses, no grade lower than a C will be accepted.
- If invited, complete a personal interview with the Department of Physical Therapy.

Students who are **accepted** into the UAB Doctor of Physical Therapy program must:

- Complete the UAB Graduate School application to include the Graduate School fee.
- Complete the UAB medical history questionnaire and physical.
- Provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service.
- Send all official transcripts to the UAB Graduate School.

- Complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy.

State law regulates the practice of Physical Therapy. Therefore, applicants are encouraged to review the nonacademic eligibility requirements for licensure to practice physical therapy upon completion of the program. These may be obtained from each individual state’s Board of Licensure for Physical Therapy. <http://fsbpt.org/LicensingAuthorities/index.asp>

Variations in these requirements are considered. In instances where applicants do not meet the principle requirements for admission, they may be admitted on probation with the approval of the Graduate School Dean. Such students must establish themselves in good standing by achieving not less than a B average by the time they have completed 1 term of approved work taken at UAB for graduate credit.

Program Prerequisites–UAB Equivalents

(Course requirements are listed in semester credit hours)

Arts and Humanities

English Compositions (6)

Social and Behavioral Sciences

Psychology (9)

Natural Sciences and Mathematics

Biology (12)

Human/Mammalian Physiology (4)

Chemistry for Science Majors (8)

Physics for Science Majors (8)

Pre-Calculus Trigonometry (3)

Psychology (9)

Statistics (3)

Medical Terminology (3)

It is strongly recommended that applicants take the following courses: practical reasoning or logic course, biomechanics or kinesiology and upper level biology (physiology).

Essential Requirements: Fundamental tasks, behaviors, and abilities necessary to successfully complete the academic and clinical/residency requirements of the program and to satisfy licensure/certification requirements, if any, have been outlined and are available upon request from the academic program office. Students requesting disability accommodations must do so by filing a disability accommodation request with the UAB Office of Disability Support Services.

Typical Program

(Course requirements are listed in semester credit hours)

First Year	Hours
Second Term	
PT 700	4
PT 702	3
PT 711	2
PT 713	3
PT 730	3

PT 760	2
	17

Total credit hours: 17

First Year

Summer Term	Hours
PT 712	3
PT 720	3
PT 731	3
PT 770	1
PT 790	1
PT 791	1
	12

Total credit hours: 12

First Year

First Term	Hours
PT 704	3
PT 706	4
PT 714	1-2
PT 715	3
PT 721	3
PT 771	2
PT 792	1
	17-18

Total credit hours: 17-18

Second Year

Second Term	Hours
PT 705	4
PT 707	3
PT 740	5
PT 772	2
PT 798	1-9
	15-23

Total credit hours: 15-23

Second Year

Summer Term	Hours
PT 743	1-3
PT 744	4
PT 761	3
PT 793	1
PT 798	1-9
	10-20

Total credit hours: 10-20

Second Year

First Term	Hours
PT 741	5
PT 746	4
PT 762	3
PT 799	1-15
	13-27

Total credit hours: 13-27

Third Year

Second Term	Hours
PT 763	2
PT 764	2
PT 773	8
	12

Total credit hours: 12

Third Year

Summer Term	Hours
PT 774	9
	9

Total credit hours: 9

Third Year

First Term	Hours
PT 775	9
	9

Total credit hours: 9

Total Credit Hours for Program: 119

Additional Information

For detailed information, contact Betsy Moore, Physical Therapy Department, School of Health Professions, SHPB, Room 333, 1705 University Boulevard (mailing address: SHPB 333, 1720 2nd Avenue South), Birmingham, Alabama 35294-1212.

Telephone 205-934-4363

E-mail becol@uab.edu

Grad School of Medicine

The UAB School of Medicine is among a select group of universities recognized for both very high research activity and significant community engagement by the Carnegie Foundation. UAB ranks 27th in funding from the NIH. Total research funding exceeds \$400M annually; \$217M in NIH funds can be attributed to the School of Medicine alone.

In the past few years, the School of Medicine has added more than half a million square feet of space for clinical facilities, research laboratories, classrooms, surgical suites, and administrative space.

Many of our faculty conduct research in university-wide interdisciplinary research centers that span more than one academic school at UAB. UAB is home to the Center for Clinical and Translational Science—the state’s only CTSA award—facilitating cross-disciplinary research and advancing scientific innovation on campus and beyond. UAB’s interdisciplinary culture presents the medical and scientific community within the university an opportunity to collaborate with colleagues from other schools, departments and disciplines who have comparable or complementary research interests. This approach has essentially eliminated individual silos that tend to prolong the discovery process.

Interdisciplinary Academic Programs

UAB offers a **NIH-funded Medical Scientist Training Program (MSTP)**, a combined MD/PhD program designed to prepare students for careers that combine laboratory investigation of disease mechanisms with the practice and teaching of clinical medicine in an academic setting. The Gerontology Education Certificate Program was established in 1980 through the cooperative efforts of the School of Social and Behavioral Sciences and the Center for Aging. Since that time, the program has expanded considerably and offers diverse academic opportunities. Students have access to a number of faculty members from multiple disciplines who bring research and academic expertise to the study of aging and the aged.

Gerontology

Certification Program Director:	Dr. Patricia L. Sawyer
Phone:	(205) 934-9261
E-mail:	psawyer@uab.edu
Web site:	www.aging.uab.edu

Program Information

The Gerontology Education Program was established in 1980 through the cooperative efforts of the School of Social and Behavioral Sciences and the Center for Aging. Since that time, the program has expanded considerably and offers diverse academic opportunities. Students have access to a number of faculty members from multiple disciplines who bring research and academic expertise to the study of aging and the aged.

The Gerontology Education Program offers multidisciplinary academic courses in gerontology leading to a graduate certificate. The study of gerontology at these levels is designed to provide people educated in various disciplines with the background needed to work in programs related to aging and the aged. The main goals are to provide students with a thorough background in existing theory and research in

gerontology, and a supplement to their existing backgrounds and professional disciplines. We have designed the program to prepare students for leadership roles in this field of growing importance for both the private and public sectors. Our program’s curriculum integrates research, theory, and practice. Its multidisciplinary approach reflects the urban mission of UAB.

The program office is located at the UAB Center for Aging. This academic program is administered by the Director of the Gerontology Education Program, who also serves as Chair of the Guidance Committee on Graduate and Undergraduate Education in Gerontology. This committee is made up of representatives of academic departments and schools throughout the UAB campus active in the study of aging and the aged. The multidisciplinary gerontology program is offered to all UAB students in good standing with the sponsorship and support of the School of Social and Behavioral Sciences, the School of Health Related Professions, and the Center for Aging.

Student Admissions and Advisement

Although general advisement is handled through UAB student advising and parent departments, student advisement in gerontology is handled formally by the Director of the Gerontology Education Program. The director facilitates student advisement with other members of the Committee on Graduate and Undergraduate Education in Gerontology. A graduate specialty is offered to students who want a special emphasis in gerontology or geriatrics. The major objective of this specialization is to provide a strong academic background for professional careers in academic and aging-related settings. There are two avenues for undertaking the graduate gerontology certificate requirements. Students in good standing in the graduate school can specialize in gerontology through their primary department. Letters of application also are accepted from students who have already completed requirements for an advanced or professional degree.

Students not currently enrolled in a graduate program at UAB may petition the university for non-degree admission status. Once accepted, the student can undertake a course of study to receive a graduate certificate upon completion of the required sequence of classes. A careful review of proposed curriculum is recommended before the student enrolls for gerontology study. This will give students an opportunity to receive initial advisement while reviewing available study plans and course schedules.

Requirements

Students must complete at least 15 credit hours of graduate-level work in gerontology or geriatrics, achieving a grade of B or better in each course. The curriculum consists of a required multidisciplinary course offered through the graduate school (GRD 600), three gerontology electives chosen from a roster of courses approved by the Committee on Graduate and Undergraduate Education in Gerontology, and a required research project or a relevant internship. To ensure a multidisciplinary perspective, courses must represent at least two departments.

Additional Information

For detailed information, contact Dr. Patricia L. Sawyer, Director, UAB Gerontology Education Program, Center for Aging, Room 201-E1, 933 19th Street South, Birmingham, AL 35294-2041.
Telephone 205-934-9261
Fax 205-934-7354
E-mail psawyer@uab.edu

Medical Scientist Training Program

Degree Offered:	M.D.-Ph.D.
Director:	Dr. Robin G. Lorenz
Phone:	(205) 934-4092 or 934-0676
E-mail:	rlorenz@uab.edu
Web site:	http://www.mstp.uab.edu

Degree Requirements

UAB's outstanding research and clinical training programs provide an unusual opportunity for students interested in careers in basic biomedical research. Such students may be admitted concurrently to the School of Medicine and the Graduate School in order to pursue both the M.D. degree and the Ph.D. degree. Ph.D. study in this program is available in the areas of biochemistry and structural biology; biomedical engineering; biostatistics; cancer biology; cell, molecular and developmental biology; epidemiology; genetics and genomic sciences; immunology; microbiology, neuroscience; nutrition sciences; pathobiology and molecular medicine; sociology; and vision science.

Individuals admitted to this highly competitive program must have excellent undergraduate academic records and MCAT scores. In addition, successful applicants must have demonstrated their commitment to a career pathway as an investigator with active participation in an original research project prior to admission. Fellowship support, including a stipend and payment of tuition and fees, is provided to successful applicants.

In general, M.D.-Ph.D. students will first complete the basic science phase of the medical curriculum and the core curriculum of the basic biomedical sciences designed for Ph.D. students simultaneously. The second phase of study will focus on completion of a dissertation research project leading to the Ph.D. degree. The final phase of the program is a series of clinical rotations and an abbreviated set of acting internships to complete the M.D. degree. Normally, the program involves about 8 years for completion, depending on the time required to complete the dissertation research.

Interested applicants must complete the standard AMCAS application to the UAB School of Medicine and a short supplementary application to the combined degree program. More information is available at <http://www.uab.edu/medicine/mstp/admissions/admissions-process>

Students who have initiated study in the University of Alabama School of Medicine or the UAB Graduate School may also apply to the MD/PhD Program. Please contact the MSTP Director for further information.

Grad School of Nursing

Degree Offered:	Ph.D.
Director (Ph.D.):	Dr. David Vance
Phone:	(205) 934-7589
Email:	devance@uab.edu

Degree Offered:	M.S.N.
Director (M.S.N.):	Dr. Ashley Hodges
Phone:	(205) 996-7608
Email:	ashleyhodges@uab.edu
Director (Nurse Anesthesia)	Dr. Laura Wright
Phone	(205) 934-7412
Email	wrightel@uab.edu
Director (A.M.N.P.)	Dr. Amy Brooks
Phone	(205) 996-6679
Email	brooks4@uab.edu

Degree Offered:	D.N.P.
Director (D.N.P.):	Dr. Anne Alexandrov
Phone:	(205) 934-6852
Email:	annealex@uab.edu

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.
Director (Ph.D.)	Dr. David Vance
Phone:	(205) 934-7589
E-mail:	devance@uab.edu

Ph.D. Program Description

The Doctor of Philosophy in Nursing is designed to prepare professional nurses as scholars, leaders, and researchers who will make a substantive contribution to the body of knowledge for the discipline of nursing and thereby improve health outcomes for those who receive nursing care. The program of studies builds on preparation at the master's or baccalaureate level. Graduates are prepared for culturally effective leadership roles in research and science, education, health policy, and health care. Doctoral students have the opportunity to develop expertise and conduct research in a selected content area. In addition to structured coursework, the program builds upon a mentorship model which recognizes that research skills are learned most effectively by working with a faculty research mentor who provides opportunities to practice the use of research techniques and the design and execution of original research within a focused program of research. In addition to core program course requirements, students complete at least 12 credits of required courses and electives in a selected content area. The PhD program was initiated in 1999. Initiated in 2000, the Post-Bachelor's PhD Option allows individuals with baccalaureate degrees in nursing to complete the PhD in nursing without first obtaining a master's degree.

Ph.D. Program Goals

The PhD curriculum prepares graduates to examine models, concepts and theories for their application in expanding the body of nursing and health care knowledge to: contribute to nursing science and health care

through research that is disseminated in professional publications and presentations to the scientific communities and health care consumers; to conduct health care investigations based upon scientifically sound conceptual and methodological decisions about research designs, measures, and analytic methods; to reflect a consistent commitment to scientific integrity in the design, conduct, and dissemination of research; to initiate and collaborate in interdisciplinary research and scholarly endeavors that contribute to health outcomes in a culturally effective manner; and to assume leadership roles in research and scholarship.

Ph.D. Admission Requirements

- A Master of Science in Nursing (MSN) degree from an accredited institution in the United States, or approved by the Minister of Education for schools of nursing in foreign countries, equivalent to that in the UAB School of Nursing;
- A minimum grade point average of 3.0 overall (based on a 4.0 scale) on all graduate level coursework;
- Completion of GRE within the past 5 years;
- For applicants from non-English speaking countries: a satisfactory TOEFL score (minimum 550);
- Computer literacy and access is required, with proficiency in word processing and e-mail correspondence, as well as familiarity and experience with the Internet. It is recommended that each student have their own personal computer meeting the specifications of the School of Nursing. (Specifications are available from the School of Nursing website);
- Eligibility for licensure as a Registered Nurse in the United States;
- A written goal statement which evidences congruence between the applicant's research interests and School of Nursing faculty research;
- At least one sample of independent written work (in English) that demonstrates the applicant's scholarship potential. Representative examples include a paper, proposal, report, or publication;
- A current curriculum vitae;
- Three references from individuals with expertise to comment on the applicant's capability for research and scholarship (for example, University professors, employers); at least one of the references must be from a doctorally prepared nurse, and;
- A personal interview.

NOTE: For the Post-Baccalaureate PhD option, the corresponding requirements are:

- A Bachelor of Science in Nursing (BSN) degree from an accredited institution in the United States, or approved by the Minister of Education for schools of nursing in foreign countries, equivalent to that in the UAB School of Nursing;
- A minimum grade point average of 3.0 overall (based on a 4.0 scale) on all undergraduate level coursework;
- Completion of GRE within the past 5 years;
- For applicants from non-English speaking countries: a satisfactory TOEFL score (minimum 550);
- Computer literacy and access is required, with proficiency in word processing and e-mail correspondence, as well as familiarity and experience with the Internet. It is recommended that each student have their own personal computer meeting the specifications of the School of Nursing. (Specifications are available from the School of Nursing website);
- Eligibility for licensure as a Registered Nurse in the United States;

- A written goal statement which evidences congruence between the applicant's research interests and School of Nursing faculty research;
- At least one sample of independent written work (in English) that demonstrates the applicant's scholarship potential. Representative examples include a paper, proposal, report, or publication;
- A current curriculum vitae;
- Three references from individuals with expertise to comment on the applicant's capability for research and scholarship (for example, University professors, employers); at least one of the references must be from a doctorally prepared nurse, and;
- A personal interview.

Ph.D. Degree Requirements

Candidates for the degree of Doctor of Philosophy in Nursing must complete the following requirements:

- Coursework and experiences based on the student's background and substantive area, with an overall GPA of 3.0 or better, and grades of B or better in all required courses on the approved program of studies;
- A comprehensive examination administered upon completion of an individualized program of studies; and
- A written dissertation demonstrating competence in research, individual inquiry, critical analysis using sophisticated statistical and/or qualitative techniques, and in-depth treatment of a health care problem in the selected content area. The investigation must make a genuine scientific contribution to knowledge, concepts, and theories in nursing. A final defense of the dissertation is required.

Postdoctoral Study

Postdoctoral studies in nursing are individually arranged based on a student's learning needs in specific areas of interest that match the strengths of the graduate faculty. The focus of postdoctoral study is on expanding and extending the student's knowledge base in nursing theory, practice, research, statistics and data management, and generally centers on a research effort of mutual interest to the student and faculty mentor.

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	D.N.P.
Director (D.N.P.):	Dr. Anne Alexandrov
Phone:	(205) 934-6852
E-mail:	annealex@uab.edu

D.N.P. Program Description

The DNP is a practice-focused terminal degree to prepare graduates to practice at the highest level in specialty practice or to assume leadership positions in healthcare. Graduates of the DNP program will focus on providing care to populations and communities with an emphasis on improving quality and access to under served, diverse populations. The three components of the DNP are advanced clinical specialty practice, leadership, and practice inquiry. Graduates will employ abilities and skills in these areas to advocate for reasonable, rational, and data-driven health regulations, standards, and evidence-based practices; sustain collaborative and strategic relationships, promote innovative, effective health care programs; and form partnerships with diverse groups to address health disparities. In addition, graduates will be prepared to

assume clinical faculty positions to address the critical nursing faculty shortage.

For most students, the Post-Master's DNP curriculum will be a minimum of 34 credits, which includes the development of a practice or leadership focused project. This Scholarly Project is designed to synthesize scholarship in an advanced practice specialty or an area of healthcare leadership and serves as a capstone program experience. All courses are offered in a distance accessible format and students may develop the scholarly project under the direction of program faculty and onsite mentors. Applications will be accepted twice a year for the summer or fall term, to either a full or a part-time cohort. Students enrolled in the DNP program will be required to come on campus between the first and second year for a two to three day intensive experience.

D.N.P. Program Goals

The D.N.P. program of study is designed to prepare nurses who: evaluate policy, care delivery, and organizational systems for current and future health care needs; translate scientific, theoretical, and ethical principles into healthcare for individuals, families, and populations; incorporate knowledge of current and emerging health technologies to improve care delivery and organizational systems; advocate for social justice, equity, and ethical policies in healthcare; Demonstrate intra and inter-professional collaboration to address health disparities and to improve health care quality across diverse populations and cultures; assume complex leadership roles to advance clinical practice and healthcare delivery at the organizational and systems level and to improve health outcomes of individuals and populations, and assume complex leadership roles to advance clinical practice and healthcare delivery at the organizational and systems level and to improve health outcomes of individuals and populations.

D.N.P. Admission Requirements

Admission is competitive, based on an assessment of the ability of the applicant to complete the program of studies and on the appropriateness of the requested program of studies to the applicant's stated goals. Because only a limited number of applicants can be accommodated in a given academic year, some well-qualified applicants may not be offered admission. In cases where there are more qualified applicants than slots available, the School of Nursing accepts the most qualified applicants.

Eligible candidates for admissions will provide evidence of:

- A master's degree in an area of advanced nursing practice (Nurse Practitioner, Clinical Nurse Specialist, Nursing Administration, or Nurse Anesthetist) from a regionally accredited institution; equivalent to that in the UAB School of Nursing;
- Current professional certification as an Advanced Practice Nurse (if applicable);
- A graduate grade point average of at least 3.0 overall (based on a 4.0 scale) or on the last 60 hours of earned credit;
- Three favorable completed *Evaluation Forms* from persons who have knowledge of the applicant's potential for success for graduate nursing studies and advanced practice nursing;
- Evidence of a license as a (1) Registered Nurse and (2) Advanced Practice Nurse or eligibility in the state in which the applicant plans to practice. Both documents must be notarized if the applicant is not a licensed nurse in Alabama;
- Confirmation of completed clinical hours in advanced specialty;
- Personal goal statement that is congruent with the program goals (300 words or less);

- Resume or Curriculum Vitae; and
- A personal interview by phone or in person with a School of Nursing faculty member or designee.

D.N.P. Degree Requirements

Candidates for the DNP degree must complete the following requirements: Completion of all coursework and clinical experiences based on the student's Program of Studies, with an overall GPA of 3.0 or better, and grades of B or better in all required courses in the School of Nursing.

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.N.
Director (M.S.N.):	Dr. Ashley Hodges
Phone:	(205) 996-7608
E-mail:	ashleyhodges@uab.edu

M.S.N. Program Description

The MSN curriculum is designed to prepare nurses for advanced generalist or specialty practice, advanced nursing roles, and doctoral study in nursing. Preparation for advanced study in nursing at the MSN level is available in a variety of specialties and advanced roles including **Nurse Practitioner, Nurse Educator, Nursing Informatics, Nursing and Health Systems Administrator**, and Clinical Nurse Leader. Students are admitted to master's study during the fall and spring terms. All nursing core courses and the majority of the master's specialties are offered in the distance accessible format. The total number of clinical hours required varies depending on the option that is selected. Students must meet the full-time relevant clinical practice experience requirement of the specialty and have a current RN license in the state in which they will do their clinical practice prior to enrolling in the advanced practicum courses. Because only a limited number of applicants can be accommodated in a given academic year, some well-qualified applicants may not be offered admission. In cases where there are more qualified applicants than slots available, the School of Nursing accepts the most qualified who apply.

Non-Degree Options at the MSN Level

Post MSN Nurse Practitioner Specialties MSN graduates who wish to take a designated program of study in preparation for sitting for one of the nurse practitioner certification examinations may apply for non-degree graduate status. This category is called the **Post MSN Nurse Practitioner Option**. Applicants for the Post MSN NP Option are considered on an individual basis, depending on NP practice experience and previous coursework. Applicants that are determined to be ineligible for the Post MSN NP Option will be encouraged to apply for a second MSN degree.

Teaching Certificate for Post BSN Applicants-Additionally, applicants at the post-baccalaureate level may choose to seek certification to prepare for the faculty role.

Clinical Research Management Certificate option that allows both nursing students and non-nursing applicants to pursue a Clinical Research Management certificate (paper application).

Registered Nurse First Assist (RNFA) Certificate for Post-Baccalaureate Applicants- A Registered Nurse First Assistant (RNFA)

is prepared to practice in a variety of acute or critical care settings. The RNFA, in collaboration with the surgeon, provides continuous and comprehensive patient care throughout the perioperative period. (on-line application)

M.S.N. Program Goals

The MSN program of study is designed to prepare nurses who: synthesize research, theoretical formulations, and principles of scientific inquiry to provide evidence-based practice; assume leadership in managing and evaluating continuous quality improvement processes; use information systems/technology to evaluate programs of care, outcomes of care and care systems; advocate and implement health care policies that improve access, equity, efficiency, and social justice in the delivery of health care; design innovative educational programs for patients, nursing staff, and nursing students using teaching and learning principles; provide ethical, culturally sensitive care in an advanced nursing role independently and collaboratively with professionals from multiple disciplines; monitor the quality of one's own nursing practice based on professional practice standards and relevant statutes and regulations; and apply theories and principles of marketing, economics, consultation, management, and leadership to comprehensively perform an advanced nursing role.

M.S.N. Admission Requirements

Requirements for admission for the MSN degree include the following:

- BSN degree from a regionally accredited institution, equivalent to the one offered by the School of Nursing, UAB;
- Cumulative grade point average of at least 3.0 on a 4.0 scale or on the last 60 semester hours; (Graduates of baccalaureate degree programs in countries other than the United States must have their baccalaureate degree transcripts evaluated by the Educational Credential Evaluators, Inc. OR The World Education Services Organization);
- Combined score of 297 on verbal and quantitative sections of the GRE; or score of 410 on the MAT; or score of 480 on the GMAT; Test scores submitted to UAB from the GRE, GMAT, or MAT must not be over 5 years old. Applicants with a 3.2 GPA or better may waive the Test Score requirement if they meet the criteria, please see: **GRE/ GMAT/MAT Waiver Process for degree seeking MSN students**;
- International students must achieve a TOEFL examination score of at least 550; and
- Three (3) letters of professional reference attesting to the applicant's potential for graduate study.

M.S.N. Degree Requirements

Candidates for the MSN degree must complete the following requirements: Completion of all coursework and clinical experiences based on the student's Program of Studies, with an overall GPA of 3.0 or better, and grades of B or better in all required courses in the School of Nursing.

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.N.
Director (A.M.N.P.):	Dr. Amy Brooks

Phone: (205) 996-6679
 E-mail: brooks4@uab.edu

A.M.N.P. Program Description

The Accelerated Master's Entry to Nursing Pathway (AMNP) is an alternate pathway into the existing master's in nursing (MSN degree) for applicants who have a bachelor's degree in a field other than nursing, who are not registered nurses, and who seek MSN preparation.

A.M.N.P. Admission Requirements

Admission is based on the applicant's academic record and all application materials at the time of the application deadline. *All grades (UAB and other colleges/universities) from previous college course work must be posted on applicant's UAB transcript by the application deadline. Courses *in progress* must be validated with a letter from the college or university students are attending.

- Applicants must have earned a minimum of a baccalaureate degree from a regionally accredited college/university prior to beginning classes.
- Upon receipt of ALL official transcripts, course work will be evaluated for advisement purposes regarding AMNP Foundational Courses.
- GPA- The minimum cumulative AND foundational GPA for all AMNP applicants is 3.0 at the time of application.
- Combined score of 297 on verbal and quantitative sections of the GRE; or score of 410 on the MAT; or score of 480 on the GMAT; Test scores submitted to UAB from the GRE, GMAT, or MAT must not be over 5 years old.
- International students must achieve a TOEFL examination score of at least 500;
- Three (3) letters of professional reference attesting to the applicant's potential for graduate study.
- A resume, outlining health care interest/experience, campus/community involvement, leadership and employment. Resumes should not be more than one page in length. Applicants are strongly encouraged to provide proof of work/volunteer experience in a healthcare setting as part of the application process. The healthcare work is to be documented by letters from a supervisor (on agency letterhead). Completion of a nursing skills course does not meet this criterion.
- Interviews- Due to the competitive nature, not all candidates that qualify for admission will be invited for interviews. Applicants will be notified within a month of the application submission deadline if they will be invited to participate in the interview round for continued consideration for admission. You will be given ample time to plan for a trip to campus if you are selected to be interviewed. Students will be notified within a month after the interviews of an admission decision.

A.M.N.P. Degree Requirements

The Program is divided into two phases: (I) the Pre-licensure phase and (II) the Master of Science in Nursing, MSN, specialty phase. Students in the Phase I must be prepared to dedicate 40 hours or more a week to the coursework and clinical for this program. Students find that it is not feasible for them to work while completing Phase I of this program. This is not a distance accessible program. Students must successfully complete Phase I and Phase II of the program to earn a degree in nursing.

Phase I: The pre-licensure phase: 50 Credits, 1395 contact hours

Phase I consists of 12 months of full time study during which students complete the required courses and clinical experiences **equivalent** to a BSN degree in preparation to apply for licensure as a registered nurse. While this will be an intense learning experience, students will emerge with the knowledge and skills required to function as a registered nurse. Upon successful completion of Phase I requirements, the University Registrar at UAB will send a certified letter to the Alabama Board of Nursing stating that students have successfully completed requirements equivalent to a BSN degree and are eligible to take the National Certification Licensure Exam for RNs (NCLEX-RN). Students who successfully complete the NCLEX-RN may subsequently apply for licensure and subsequently apply for employment as a Registered Nurse.

Phase II: The Master of Science Specialty Phase:

Phase II consists of four or more semesters of part time study via distance education through the School of Nursing and clinical work as a registered nurse. The typical programs of study are listed on each of the specialty track's individual fact sheet. The spring admission into a master's specialty track will provide you with an estimate length to complete your Master of Science in Nursing degree. **Successful completion of Phase II leads to a Master of Science in Nursing degree (MSN) with eligibility to take a board certification exam in most specialties. Only after successful completion of a board certification exam may the RN use the corresponding designation as part of their professional title.**

A.M.N.P. Program Goals

The MSN program of study is designed to prepare nurses who: synthesize research, theoretical formulations, and principles of scientific inquiry to provide evidence-based practice; assume leadership in managing and evaluating continuous quality improvement processes; use information systems/technology to evaluate programs of care, outcomes of care and care systems; advocate and implement health care policies that improve access, equity, efficiency, and social justice in the delivery of health care; design innovative educational programs for patients, nursing staff, and nursing students using teaching and learning principles; provide ethical, culturally sensitive care in an advanced nursing role independently and collaboratively with professionals from multiple disciplines; monitor the quality of one's own nursing practice based on professional practice standards and relevant statutes and regulations; and apply theories and principles of marketing, economics, consultation, management, and leadership to comprehensively perform an advanced nursing role.

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	M.S.N.
Director (Nurse Anesthesia):	Dr. Laura Wright
Phone:	(205) 934-7412
Email:	wrightel@uab.edu
Website:	www.uab.edu/na

The Nurse Anesthesia program prepares the registered nurse in all aspects of nurse anesthesia practice at the graduate level. The sequence of student coursework combines the knowledge of basic health sciences, scientific methodology in anesthesia, and advanced preparation to include a state-of-the-art scientific paper. Completion of the prescribed coursework and clinical practice comprise the requirements for the degree. The graduate is eligible to take the National Certification

Examination, which, upon passing, allows them to practice as a certified registered nurse anesthetist.

The Nurse Anesthesia Program has received a ten-year accreditation in 2010 by the Council on Accreditation (COA) of Nurse Anesthesia Programs.

Council on Accreditation of Nurse Anesthesia Educational Programs
222. South Prospect Ave.
Park Ridge, IL, 60068
Phone: (847) 692-7050
Website: <http://www.aana.com/aanaaffiliates/accreditation/Pages/Accredited-Programs.aspx>

Regional Clinical Sites

Students in the Nurse Anesthesia Program (NAP) at the University of Alabama at Birmingham (UAB) are admitted to one of 5 program components as selected by the student in their application. Students from all components attend classes on campus at UAB for the first ten months. The remainder of the program (clinical rotations) are based at the student's corresponding component site.

Alabama:

- Birmingham
- Dothan
- Huntsville
- Montgomery
- Tuscaloosa

Professional Program Admission Requirements

Qualified candidates are graduates from an accredited registered nursing program with a baccalaureate degree in nursing. All coursework towards a BSN must be completed by December prior to the start of the Nurse Anesthesia program the following August. Applicants are required to provide proof of a valid professional RN license in the U.S. Only candidates with at least one year experience as an RN in a critical care setting are considered for admission. Acceptance will be based upon the student's academic ability, work experience, and aptitude for a career in nurse anesthesia. The candidate is expected to satisfy the following requirements:

- a minimum cumulative grade point average of 3.0 (A = 4.0),
- a minimum cumulative grade point average of 3.0 in science prerequisites,
- a grade of C or better in each prerequisite course,
- all sections of the GRE must be completed prior to application (verbal reasoning, quantitative reasoning, and analytical writing)
- a personal interview with the selection committee, and
- if accepted, complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service.

Professional Program Prerequisites

(courses listed in semester credit hours):

Anatomy (3-4 semester credit hours)
Physiology (3-4 semester credit hours)

Microbiology (3-4 semester credit hours)
College Chemistry (3-4 semester credit hours)
Descriptive Statistics (3 semester credit hours)

Application Procedure

Applicants interested in the Nurse Anesthesia Program at University of Alabama at Birmingham (UAB) Nurse Anesthesia should apply through NursingCAS. NursingCAS is the online, centralized application service for nursing programs. Visit www.nursingcas.org and click "Apply Here" to initiate your application. And then click on "Create Account" and complete the required fields in order to start your application. View this short instructional [video](#) on how to complete a NursingCAS application.

- Early Decision Application Deadline: June 1st

The UAB Nurse Anesthesia Program has added an early decision application cycle. Applicants with a desire to attend the UAB Nurse Anesthesia Program should submit the application with all required materials by June 1st for matriculation in Fall of the following year. The screening process for early decision is more stringent and only a few will be chosen. However, applications not chosen for early decision will automatically roll over to the regular admission cycle in September without penalty. If the application rolls over to the regular admission cycle, only applicable changes to the application need to be submitted by September 1st and no additional application fees will be assessed.

Criteria for acceptance: applicants with a desire to attend UAB Nurse Anesthesia Program, otherwise the criteria used for early acceptance is the same as for the regular application cycle though only the top candidates will be selected for the early decision cycle.

Criteria for maintaining status: early acceptance is contingent on completing one year of ICU experience; other contingencies may be assigned on an individual basis.

Professional Program Application Deadline

- June 1st for early decision (August for fall following year)
- July - Notification of interviews, interviews, and notification of decision
- September 1st for regular admissions cycle
- November - Notification of interview
- December through February - interviews
- Decision notification two weeks after interview
- August - Students begin the program fall semester

UAB Nurse Anesthesia Program Supplemental Application

GPA Calculation Spreadsheet (MAC user please contact Ms. Stacey Smith (205) 934-7412, staceysmith@uab.edu)

Applicants are strongly encouraged to complete the GPA calculation spreadsheet and mail with your supplemental application.

Nurse Anesthesia Curriculum

The Nurse Anesthesia Program begins in the fall semester of each year. It comprises 67 semester hours of didactic instruction and 45 semester hours of clinical practicum and requires 27 months of full-time commitment. Students complete all foundation courses before beginning the clinical practicum, which starts after the first (ten) months of enrollment. The curriculum does not permit enrollment on a part-time basis.

Deadlines

Note: See summarized fact sheet for experience requirements.

Entry Date	Deadline	Notes
Fall 2014	June 1, 2013	Early decision
	September 1, 2013	Regular admission cycle
Fall 2015	June 1, 2014	Early decision
	September 1, 2014	Regular admission cycle

Funding

The School of Nursing at UAB has excellent scholarship, traineeship, fellowship and loan programs in which many students participate. Please visit "funding" for more information.

Outcomes

Nurse Anesthesia Clinical Education

The Nurse Anesthesia Program not only provides students with coursework designed to learn the skills they need, the program also focuses on the theoretical and clinical aspects of anesthesia. Students spend much of their time in clinical settings receiving valuable experience.

Clinical experiences give students hands-on practice in the field of anesthesia. After their clinical experiences, nurse anesthesia graduates can:

- evaluate and assess patients pre, post, and intraoperatively;
- plan the anesthetic management and immediate pre and post-anesthesia management;
- develop and implement an appropriate anesthesia plan designated for patients of all ages with a variety of pathological conditions;
- recognize emergency patient conditions and perform skills required during emergency life support situations; and
- recognize, evaluate, and prevent anesthesia complications.

Nurse Anesthesia students participate in several clinical assignments:

1. First year students will receive their first assignments in May during their first year. The first schedule is designated as the summer semester schedule (first year student schedule) and extends from July through August.
2. The second clinical schedule (fall semester schedule) extends from September through October.
3. The second year clinical rotation schedule covers a 12-month period that begins in November and ends in October.
4. One last schedule is made in September or October of the last semester in the program. This lists where graduate students will finish their clinical education during the month of November. Some students request this assignment be the site where they have accepted employment. A priority is placed on these requests and all attempts are made to fulfill them.

Graduate students who have begun their clinical rotations are designated on most program forms as SRNAs (student registered nurse anesthetists). SRNAs at clinical sites are under the direction of the Clinical Coordinator. The Clinical Coordinator is a CRNA clinical faculty

who serves as the principal contact person for the program and is in charge of the SRNAs clinical training at a particular clinical site.

Clinical Coordinators, CRNAs and Anesthesiologists also serve the students by:

being available to render clinical assistance in the operating room suite or other areas where anesthesia services are required;

- apprising the student of clinical responsibilities;
- serving as a role model; and
- providing evaluation and feedback to the students.
- providing a variety of clinical rotations within the facility

Clinical rotations are adjusted in a manner that will address individual student needs. Students cannot be assigned to all affiliates, but the program will attempt to provide each student with equal types of clinical experience.

Grad School of Optometry

Dean: Dr. Kelly K. Nichols

The UAB School of Optometry (UABSO) was established by the Alabama legislature in 1969 and admitted its first class of eight students on September 27, 1969. The School's first Doctor of Optometry (O.D.) degrees were awarded on June 4, 1973. Since that time, the School has grown to include graduate degrees (M.S., Ph.D.) in Vision Science and post-doctoral residency education. However, the optometry classes still average only 40 – 45 students. This makes us one of the smaller optometry schools in the country – a fact that we feel benefits the educational experience of our students.

Vision Science

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Ph.D.(Traditional and Sensory Impairment tracks), M.S., O.D./M.S.
Program Coordinator:	Dr. Stefanie B. Varghese
Phone:	(205) 934-6743
E-mail:	sbvarghese@uab.edu
Web site:	http://www.uab.edu/vsgp/

Program Information

Envision yourself in a lab conducting cutting-edge research that may lead to improved treatments for glaucoma or cataract, gene therapy for blinding retinal diseases, or provide fundamental information on how the brain works so that we can see. Envision yourself using the knowledge and research skills you gain as a student to establish your own research lab, serve as a scientific advisor to governments or the military, or teach at the graduate or undergraduate level. These are just a few of the many possibilities available to graduates of the Vision Science Graduate Program.

Through basic, translational, or clinical research, the Vision Science Graduate Program offers opportunities to investigate all facets of vision, including (but certainly not limited to) visual neuroscience, the genetics of blinding diseases, visual perception, all areas of the eye and the visual regions of the brain using a variety of techniques, including functional brain and eye imaging. Our didactic courses provide fundamental knowledge about the biological bases of vision. Laboratory research provides intensive involvement with a faculty member and other students to prepare students for postdoctoral study or other research environments. We have the most up-to-date advanced equipment to address our research from many avenues of exploration to solve the most difficult problems. We actively foster unique inter- and intra-departmental laboratory collaborative efforts to exploit the full benefits of UAB's resources and explore students' full potential.

Admission and Financial Aid

Applications for admission to the graduate program in vision science are reviewed by the Graduate Admissions and Advisory Committee.

M.S. Degree

- GRE Score Required

O.D./M.S.

- OAT Score Required
- Financial Assistance available to qualified students

Ph.D. Traditional Track

- GRE Required
- Financial Assistance available to qualified students

Ph.D. Sensory Impairment Track

- GRE or MAT recommended

M.S. Degree

Some students may wish to pursue graduate training at the master's level. Two calendar years are needed to complete the M.S. degree in vision science. Each candidate must complete a minimum of 30 hours of credit: 24 credit hours in vision science and 6 credit hours in related graduate courses.

In addition, the candidate must successfully complete a research thesis by the conclusion of the final year.

O.D./M.S.

Selected students in the UAB optometry professional program are encouraged to combine the O.D. degree with the M.S. degree in Vision Science. Financial assistance is available for qualified students. Potential candidates should have completed an undergraduate degree in a biological, physical, or health science field.

Ph.D. Degree (Traditional and Sensory Impairment Tracks)

The Ph.D. degree is based upon completion of graduate course work, a qualifying examination, research, and a dissertation and defense. There is considerable flexibility in the coursework for the Ph.D. in vision science. Each student is required to take the first-year core curriculum for their respective track. Students then take three additional courses, selected by the student in consultation with the mentor, and a course in statistics and ethics. The program is flexible so that, for example, students who have interests in visual neuroscience may take courses in the neuroscience sequence: VIS 729, Introduction to Neurobiology; Cellular and Molecular Neurobiology; Integrative Neuroscience; and Developmental Neuroscience.

Other courses at a similar level can be substituted so that students can take maximum advantage of offerings in other programs. Individuals with clinical backgrounds will have an opportunity for clinical development. Students are also offered an opportunity to gain teaching experience.

Additional Information

Deadline for Entry Term(s):	Fall, Spring, and Summer
Deadline for All Application Materials to be in the Graduate School Office:	January 15th, November 15th, and April 15th
Number of Evaluation Forms Required:	Three

Entrance Tests: GRE (TOEFL and TWE also required for international applicants whose native language is not English.) OAT is considered for the OD/MS program. MAT or GRE is considered for the PhD Sensory Impairment Track

Web site: <http://www.uab.edu/vsgp/>

For detailed information, contact the graduate program coordinator, Dr. Stefanie Varghese, UAB Department of Vision Science, WORB 601A, 1720 2nd Ave S., Birmingham, AL 35294-4390 (office location: Worrell Building, Room 601A, 924 18th Street South).

Telephone 205-934-6743

E-mail sbvarghese@uab.edu

Web <http://www.uab.edu/vsgp/>

Grad School of Public Health

About the School of Public Health

The School of Public Health was established in 1978 when Dr. William Bridges established a program to address community health problems. His activity captivated a great deal of press and attracted the attention of Dr. Jarvis Ryals, a neurologist, 1965 UAB graduate, and donor. He initiated the creation of the building that the school now occupies and requested that it be named after his parents.

For over thirty years, the School of Public Health has continued Dr. Bridges' crusade to improve health and living conditions in local Alabama communities and has expanded that vision to all areas of the world. Through research, education, and community outreach, we address community and global health problems and train the next generation of innovative public health workers.

Mission

The mission of the School of Public Health is to lead in developing, disseminating and applying knowledge to prevent disease and promote health in the human population. Because of its inherent breadth, public health is comprised of many disciplines. Thus the school achieves its mission by bringing the various disciplines together to educate individuals who will be working to prevent disease and improve the health of the school's constituent populations. These individuals include experienced public health and other health professionals, undergraduates with education backgrounds in the sciences, and persons from developing countries with health-related backgrounds. An implicit part of this mission is a commitment to increase and validate, through research and practice, the body of knowledge upon which the school's educational programs are necessarily based.

Contact Information

Dean:	Max Michael, MD
Associate Dean of Academic Affairs:	Melissa Galvin, PhD, MPH
Email:	soph@uab.edu
Phone:	(205) 934-4993
Website:	www.uab.edu/PublicHealth

DEGREES OFFERED

Master of Public Health (M.P.H.)

Prospective students should use this Master of Public Health (M.P.H.) checklist to obtain specific admissions requirements on how to apply to Graduate School.

Biostatistics Concentrations:	Biostatistics
Environmental Health Concentrations:	Environmental Health Environmental Health & Toxicology (also online) Accelerated Industrial Hygiene

	Industrial Hygiene Occupational Health & Safety (also online) Fast Track (EHS)
Epidemiology Concentrations:	Epidemiology Fast Track (EPI)
Health Behavior Concentrations:	Health Behavior Health Behavior/Nursing MPH/Psychology PhD MPH/Sociology PhD Fast Track (HB)
Health Care Organization and Policy Concentrations:	Health Care Organization (also online) General Theory & Practice Maternal and Child Health Policy and Leadership (also online) Public Health Preparedness Management Health Policy Maternal & Child Health/Social Work (also Online) Maternal & Child Health/Nursing MPH/Juris Doctorate MPH/Business Administration MPH/Doctor of Optometry MPH/Public Administration Maternal and Child Health Policy and Leadership Fast Track (HCOP)
General PUH Track	MPH/MD (UAB) MPH/DVM (Auburn)

Master of Science in Public Health (M.S.P.H.)

Prospective students should use this Master of Public Health (M.S.P.H.) checklist to obtain specific admissions requirements on how to apply to Graduate School.

Biostatistics Concentrations:	Clinical and Translational Science (BST)
Environmental Health Concentrations:	Environmental Health & Toxicology Industrial Hygiene
Epidemiology Concentrations:	Applied Epidemiology Pharmacoepidemiology and Comparative Effectiveness Research Clinical and Translational Science (EPI)
Health Behavior Concentration:	Clinical and Translational Science (HB)
Health Care Organization & Policy Concentrations:	Outcomes Research MSPH/ Psychology PhD

Doctor of Philosophy (Ph.D)

Prospective students should use this Doctor of Philosophy (Ph.D.) checklist to obtain specific admissions requirements on how to apply to Graduate School.

Biostatistics Concentration:	Biostatistics
Environmental Health Sciences Concentration:	Environmental Health Sciences
	Industrial Hygiene
Epidemiology Concentrations:	Epidemiology
Health Behavior Concentration:	Health Education and Health Promotion

Doctor of Public Health (Dr.P.H.)

Prospective students should use this Doctor of Public Health (Dr.P.H.) checklist to obtain specific admissions requirements on how to apply to Graduate School.

Health Care Organization & Policy Concentrations:	Public Health Management
	Outcomes Research
	Maternal and Child Health Policy
Degree Offered:	MPH, MSPH, MS, DrPH, PhD
Phone:	(205) 934-4993
Email:	soph@uab.edu
Web site:	www.soph.uab.edu

Additional Information

Deadline for Entry Term(s):	Application Deadlines
Terms of admission:	Master's students (MPH and MSPH) should plan to begin studies only in the fall semester of each year. Some programs allow spring admission. Doctoral students (DrPH) may apply for admission anytime but are strongly encouraged to matriculate in the fall.
Entrance Test:	www.soph.uab.edu/graduate/prospective
International Transcripts:	International transcripts must be submitted to World Education Services (WES) or Educational Credential Evaluators (ECE) for an official course-by-course credential evaluation (document-by-document evaluations will not suffice). All WES or ECE evaluations are to be received by SOPHAS directly from WES or ECE.
Number of Evaluation Forms Required:	Three
School of Public Health Catalog:	www.soph.uab.edu/catalog

For detailed information about the M.P.H., M.S.P.H., and Dr.P.H. programs, please consult the School of Public Health website or visit the UAB School of Public Health:

Ryals Public Health Building
 Room 130, Student Services
 1665 University Boulevard
 Birmingham, AL 35294-0022
Telephone: 205-934-4993
E-mail: soph@uab.edu
Website: www.uab.edu/PublicHealth
Facebook: www.facebook.com/UABSchoolofPublicHealth

Interdisciplinary Programs

School-wide Interdisciplinary Graduate Programs

The School of Public Health offers several interdisciplinary graduate level programs, which utilize the expertise found in other UAB schools and universities.

- Coordinated Doctor of Medicine and Master of Public Health
- Coordinated Veterinary Medicine and Public Health

MPH / MD Admissions

Students must be admitted the UAB School of Medicine (SOM) MD program before being considered for the Coordinated MD/MPH Program. Interested students will have the School of Medicine forward their application materials to the School of Public Health (SOPH), submit to the Graduate School a SOPH application, and career goals statement. Students may elect to apply to both programs at the same time, to the MPH program after they have matriculated to medical school or, if accepted to the SOM after enrolling in the MPH, the student may transfer to the coordinated degree. The Associate Dean will review the application, make an admission decision, and serve as the advisor for all MD/MPH students.

Website: http://www.soph.uab.edu/md_mph

Program Options

Students may choose between two program formats: a four-year program or a five-year program.

- The four-year program requires students to complete MPH coursework while also completing medical school coursework. Additionally, students in the four-year program begin taking courses the summer before they begin medical school.
- The five-year program requires students to take a one-year leave of absence from medical school to concentrate on MPH coursework.

MPH / MD Curriculum

Requirements	Hours
Core Requirement (20) Hours	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
ENH 600 Fundamentals of Environmental Health Science	3
EPI 610 Prin of Epidemiologic Research	4

EPI 610L	Principles of Epidemiologic Research - LAB	0
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
PUH 697	Practice Placement / Internship	1-9
Focus Track (PUH courses)		14
Credit from MD Curriculum	8 or more hours	8
Total Hours		43-51

Dropping Out of the Program Prior to Completion

Students MUST complete both degrees to successfully complete the program. Students must meet with the DVM/MPH committee to request a leave or to drop out of the program.

MPH / DVM Admissions

Students must be admitted to the Auburn University's Veterinary Medicine program before being considered for the Coordinated DVM/MPH Program. For more information about the DVM Program please contact the College of Veterinary Medicine at Auburn University; www.vetmed.auburn.edu, phone (334) 844-2685 or email admiss@vetmed.auburn.edu

Entry Into Program

Students may enter the MPH at any time during enrollment in the DVM program, but there must be evidence that the MPH coursework will be completed prior to completion of the DVM. A student who is already enrolled in a UAB's MPH program who is subsequently accepted to Auburn University's DVM program may apply to transfer to the DVM/MPH program track. Alternatives to this arrangement will be considered by the student and his or her advisor. It is expected that both programs will be completed within five years, at which time both degrees will be awarded. The Associate Dean will review the application and make an admission decision. The Associate Dean will serve as the advisor for all DVM/MPH students.

To apply to the UAB School of Public Health MPH Program, interested students should submit their application using The University of Alabama at Birmingham's web-based system Apply Yourself.

To View Application Requirements: www.soph.uab.edu/graduate/prospective/admissions/us

Requirements		Hours
Core Requirements - 20 hours <small>ALL COURSES ARE ONLINE</small>		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
EPI 610	Prin of Epidemiologic Research	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 610L	Principles of Epidemiologic Research - LAB	0
EPI 623	Intro SAS Sftware <small>Online Course</small>	1
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
PUH 697	Practice Placement / Internship	1-9

Elective courses (PUH)	14
Credits from DVM at Auburn Univeristy	8
VMED 5030/ Public Health and VMED 5250/Principles of Infectious Diseases.	
Total Hours	44-52

Dropping Out of the Program Prior to Completion

Students MUST complete both degrees to successfully complete the program. Students must meet with the MD/MPH committee to request a leave or to drop out of the program.

Biostatistics

Degree Offered:	M.P.H., M.S., M.S.P.H., Ph.D.
Department Chair:	Naomi Fineberg, Ph.D.
Phone:	(205) 934-4905
E-mail:	bstgrad@uab.edu
Web site:	www.soph.uab.edu/bst

Biostatistics is the field of statistical methods related to biological research in areas such as public health, medicine, dentistry, and nursing. At UAB, the Department of Biostatistics focuses on the application of existing statistical techniques to studies in these health related fields and development of new statistical techniques.

Dr. Naomi Fineberg is the Chair of the department, Dr. Stacey Cofield is the Director of Graduate Studies, and Della Daniel is the department liaison to the graduate program. The Department has 24 faculty members and staff , with a wide variety of research interests. Our department includes a Section on Statistical Genetics and a Section on Research Methods and Clinical Trials. We offer training both at the graduate and post-doctoral level. At the graduate level, the Department offers both the MS and PhD degrees in Biostatistics

Graduate applicants should have a strong quantitative training background including calculus and linear algebra. In post-doctoral training, efforts focus on collaboration in advancing training of clinicians in research methods through a MSPH degree , and offer post-doctoral training of statisticians in the areas of Statistical Genetics and Trials Management .

Research directed by faculty in the Department is supported in excess of \$15 million annually, and includes investigations in diverse areas such as the methodological development of techniques in statistical genetics, understanding the causes of the excess stroke mortality in the southeastern US, and advancing techniques to determine the number of patients needed in randomized clinical trials using data from nested pilot studies.

The Department welcomes the development of collaborative relationships with researchers in health related fields, and is actively involved with many departments in the School of Medicine, School of Dentistry, and School of Nursing at UAB. We also have similar active collaborations with universities throughout the world.

Admissions

Requirement	Fulfilled By:
Deadline for Entry Term(s):	April 1st
Number of Evaluation Forms Required: New Row	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
SOPH Graduate Catalog Description	http://www.soph.uab.edu/catalog
Department Contact:	Della Daniels
Department Contact Email:	ddaniel@uab.edu

Biostatistics

School of Public Health's Biostatistics Student Handbook

School of Public Health's Student Catalog

Prospective students should use this [checklist \(M.P.H., M.S.\)](#) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this [checklist \(PhD\)](#) to obtain specific admissions requirements on how to apply to Graduate School.

The MPH Program

The MPH degree in Biostatistics is intended primarily for those who wish to acquire an MPH degree with an emphasis on statistical methodology. This can include individuals from decision-making positions in health care settings as well as those interested in data management, statistical analyses and interpretation, and presentation of analytical results. This degree can be completed in approximately 2 years. Note that the MPH does not require some of the theoretical courses required for the MS, and as such, it is not a direct route to prepare a student for a PhD. **Students anticipating that they will wish to continue for a PhD in biostatistics are advised to pursue the MS rather than the MPH.**

Required Courses: MPH in Biostatistics

Requirements	Hours
MPH Core (including the Integrative Experience)	16 or 17
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Intro to Epidemiology	3-4
or EPI 610 Prin of Epidemiologic Research	
HB 600 Social and Behavioral Science Core	3
HCO 600 Introduction to Population Based Health Programs	3
PUH 695 The Public Health Integrative Experience	1
GRD 727 Writing & Reviewing Research	3
Biostatistics Core	15
BST 619 Data Collection and Management	3
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
BST 626/ BST 626L Data Management and Reporting with SAS	3
BST 697 Internship in Biostatistics	3
Biostatistics Electives *	9

Outside Electives **	3
Total Hours	43-44

- **Biostatistics Electives:** Minimum 9 credit hours of regular courses of 623 or higher-level.
- **Outside Electives:** A minimum of 3 graduate credit hours of electives must be taken from some field of Biology, Public Health or Medicine.

The academic advisor must approve these courses.

MS in Biostatistics

The Department of Biostatistics offers an MS degree in biostatistics. This program provides a balance between theory and application, the perspective being the role of statistics and modeling in scientific research. The objective is to produce research-oriented scientists who can advance statistical and modeling theory and can interact effectively with scientists in other disciplines to advance knowledge in those fields. For admission to the MS program, a student's undergraduate curriculum must include a 3-semester sequence of calculus or equivalent, linear matrix algebra, and proficiency in computing. It is preferred that students have additional advanced mathematics courses, e.g., differential equations, advanced calculus including special functions, and complex analysis. Some background in the natural sciences would be helpful. Interested students should contact the department of Biostatistics.

Requirements	Hours
MS Required Courses	27
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
BST 623 General Linear Models	3
BST 626 Data Management and Reporting with SAS	3
BST 626L Data Management and Reporting with SAS Laboratory	0
BST 631 Statistical Theory I	4
BST 632 Statistical Theory II	4
BST 655 Categorical Data Analysis	3
BST 691 Pre-Doctoral Seminar Series ^{4 hours required for BST 691:} Biostatistics Pre-doctoral Seminar Series	1
Biostatistics Electives *	6
Biostatistics Electives	6
Required Outside Electives	7
Other Related Courses including Non-Thesis (BST 698)	3
Total Hours	43-46

PhD in Biostatistics

The PhD degree in biostatistics provides a balance between theory and application. In addition to providing students with an in-depth understanding of statistical theory and methodology, the main objectives of the program are to train students to become independent researchers, effective statistical consultants and collaborators in scientific research, and effective teachers.

All international students must demonstrate proficiency in spoken and written English before graduation, through the Graduate School's ESL Assessment. Dependent on the results of that assessment, the GPC may require additional course work in both written and/or oral English

for students not showing proficiency upon arrival, or during any period of their graduate studies.

Requirements		Hours
Required Biostatistics Courses:		44
BST 621	Statistical Methods I	3
BST 622	Statistical Methods II	3
BST 623	General Linear Models	3
BST 626	Data Management and Reporting with SAS	3
BST 631	Statistical Theory I	4
BST 632	Statistical Theory II	4
BST 655	Categorical Data Analysis	3
BST 665	Survival Analysis	3
BST 691	Pre-Doctoral Seminar Series ^{6 credit hours required}	1
BST 723	Theory of Linear Models	3
BST 735	Advanced Inference	4
BST 760	Generalized Linear and Mixed Models	3
BST 765	Advanced Computational Methods	3
Biostatistics electives [*]		9
EPI 610	Prin of Epidemiologic Research (Outside Requirement)	4
Outside electives ^{**}		3
Readings & Research ^{***}		
Total Hours		75-84

Readings & Research: Students are strongly recommended to take Research in Statistics (BST 698) under various faculty members every semester after completion of the first-year equivalent of course work, until a research advisor is chosen.

Clinical and Translational Science

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

School of Public Health's Biostatistics Student Handbook

School of Public Health's Catalog

Master of Science in Public Health (MSPH) in Clinical and Translational Science (CTSB)

There is a growing interest in medical and other health science schools in developing the clinical research skills of faculty members and fellows. This interest has been fueled by increased support from the NIH to prepare such individuals to meet the demand for clinical investigators in the field. Locally, the Schools of Medicine and Public Health have combined efforts to create a training program for young faculty members and fellows from a variety of disciplines.

This program is a post-medical or other health science degree training program, aimed primarily at fellows and faculty members interested in developing skills required for clinical research. It is anticipated that this academic training will supplement extensive training in the content area in which the student is trained, and senior mentoring in the politics and policies of project development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects. The program consists of a core set of courses common to all students, plus research elective and focus elective courses that reflect the academic interest of the student. At this

time, the program can accommodate students with specific interest in **Biostatistics**, Environmental Health, Epidemiology, and Health Behavior. As a result, there will be some variation in the specific knowledge and skills acquired by each graduate. However, the primary learning objectives will apply to all students, irrespective of departmental affiliation. As such, graduates will be able to do the following upon completion of the program:

- design, conduct, and evaluate clinical research studies;
- understand issues of data collection and study management;
- follow appropriate policies and procedures relating to the utilization of human subjects in clinical research;
- demonstrate an understanding of the ethics of research on human subjects;
- prepare competitive applications for extramural research funding;
- prepare manuscripts for publication in the scientific literature; and
- critically evaluate published research

Admission

Applicants should possess a medical or other health science professional degree. They may be in their final years of training as residents or fellows or hold positions as junior faculty members. The Graduate Record Examination (GRE) is required for applications to all MSPH programs in the School of Public Health. **The required minimum scores are 35th percentile in the Verbal category and 40th percentile in the Quantitative.** The GRE may be waived at the discretion of the committee, for applicants who have been pre-screened by the clinical investigator training grant committee of the School of Medicine. The applicant must produce three letters of reference and a letter stating that he/she will be guaranteed sufficient release time from clinical duties to be able to attend classes regularly and fulfill course requirements in a timely manner. A medical/health sciences mentor should be identified and a setting where the student can gain experience in conducting clinical research. A faculty member within the School of Public Health will be assigned as an advisor based on the stated interests of the applicant.

Curriculum

The MSPH in Clinical and Translational Science consists of a minimum of 41 credit hours. Of these, 14 hours are required, including 9 hours of specific Biostatistics courses and 5 hours of specific Epidemiology courses. Students then select at least 9 credit hours from a list of approved Masters Research Electives, complete 9 hours of focus specific electives in Biostatistics, Epidemiology, Environmental Health, or Health Behavior, and take at least 9 hours of (698 level) Masters research to fulfill the MSPH requirement for conducting a research project.

Requirements		Hours
MSPH Core Requirement: 14 hours		14
BST 621	Statistical Methods I	3
BST 622	Statistical Methods II	3
BST 625	Design/Conduct Clinical Trials	3
EPI 607	Fundamentals of Clinical Research	3
EPI 680	Topics in Clinical Research	2
Masters Project Research		9
BST 619	Data Collection and Management	3
BST 626	Data Management and Reporting with SAS	3
BST 626L	Data Management and Reporting with SAS Laboratory	0
EPI 625	Quant Methods in Epidemiology	3
EPI 703	Special Topics in the Epidemiology of Chronic Disease	3

Additional approved EPI course	3
HB 624 Adv Theory Behav Sci	3
HCO 677 Patient-Based Outcomes Measurement	3
Biostatistics Selectives	9
Masters Project Research	9
Total Credit Hours	41-44

Environmental Health Sciences

Degree Offered:	M.P.H., M.S.P.H., Ph.D.
Department Chair:	Michelle V. Fanucchi, Ph.D.
Phone:	(205) 934-6080
Website:	www.soph.uab.edu/ehs
Department Contact:	Julie Brown
Department Contact Email:	jebrown@uab.edu

Program Information and Objectives

The Department of Environmental Health Sciences focuses on understanding the causes, mechanisms, and consequences of environmental and occupational hazards, as well as the prevention and management of these hazards. Principal research areas include: Environmental Toxicology, Free Radical Biology, Cell Signaling, Exposure Assessment, and Occupational Safety.

The objectives of the program leading to a PhD in Environmental Health Sciences are to prepare students for scientific careers in academia, industry, government, and non-governmental organizations. A combination of didactic, laboratory experience, and/or field-based training will be provided to achieve the specific goals for each student. This degree is granted on the basis of distinctive academic achievement, scholarly proficiency, and original research. The Department offers training in Environmental Health Sciences Research, and Industrial Hygiene.

At the doctoral level, two foci are offered:

- Environmental Health Sciences Research (ENH)
- Industrial Hygiene (IHY)

At the master's level, the following programs of study are offered:

- MPH in Environmental Health/Toxicology (ETOX) - also offered fully online
- MPH in Occupational Health and Safety (OHSM) - also offered fully online
- MPH in Industrial Hygiene (IHY)
- MPH Fast Track (5th Yr) Program
- MPH in the Accelerated Program in Industrial Hygiene (AIHY)
- MSPH in Environmental Health Toxicology (ETOX)
- MSPH in Industrial Hygiene (IHY)

Admission

Applicants should have a bachelor's or higher degree in one of the natural sciences, medical sciences, or engineering fields from an accredited college or university. Regardless of degree, this should include courses in biology; general, organic, and physical chemistry; physics;

and mathematics through calculus. Applicants interested in specializing in Environmental Toxicology are encouraged to have completed courses in biochemistry and physiology. Industrial Hygiene applicants are expected to have completed Industrial Hygiene courses in an accredited Industrial Hygiene Masters program or the equivalent, or have significant experience in the practice of Industrial Hygiene. Applicants who do not have adequate preparation in these areas are expected to complete remedial training as part of their didactic requirements.

Deadline for Entry Term(s):	April 1st
GPA	3.0
Number of Evaluation Forms:	Three
Entrance Tests:	
GRE	score of at least 146 on the quantitative section and 156 on the verbal section is required; consideration will also be given to performance on the analytical section
TOEFL	TOEFL and TWE also required for international applicants whose native language is not English.
SOPH Graduate Catalog:	http://www.soph.uab.edu/catalog
SOPH Admissions:	http://www.soph.uab.edu/graduate/prospective

Basic science applicants are encouraged to apply no later than February 1.

Curriculum

PhD students are expected to complete the department course requirements as well as those courses necessary to prepare them to conduct their dissertation research. The curriculum requirements can be found at <http://www.soph.uab.edu/node/1112>.

Environmental Health Sciences

School of Public Health's Environmental Health Sciences' Student Handbook

School of Public Health's Catalog

PhD in Environmental Health Sciences

Prospective students should use this checklist (PhD) to obtain specific admissions requirements on how to apply to Graduate

The PhD program in Environmental Health Sciences prepares scientists for careers in research, environmental program management, and policy analysis. Education and research in the identification, evaluation, and control of hazards to human health are emphasized in this program. Students may concentrate on a wide variety of areas including exposure assessment, environmental chemistry, non-point source water pollution, risk assessment and management, environmental toxicology, and industrial hygiene. Graduates are qualified to assume upper-level positions in the public or private sector in management, teaching, research, or consulting. Graduates are particularly qualified for teaching

or research positions in academic institutions that require sound research training.

The PhD degree in the Department of Environmental Health Sciences has two foci:

- Environmental Health Sciences Research
- Industrial Hygiene

Admission

Particular emphasis is placed upon students' interest and their commitment to research. The PhD degree requires an original and carefully thought out research dissertation. Students with previous experience and therefore specific ideas for research are particularly encouraged to apply. The general departmental admission requirements apply to the PhD applicants; however, a previous master's degree is also required. Those students who do not have a master's degree in an appropriate area of environmental health must meet the department's course requirements for the MSPH in environmental health and toxicology or industrial hygiene, depending upon the focus of the PhD dissertation research.

Curriculum

PhD students are expected to complete the department core course requirements, as well as those courses required for their foci and are necessary to prepare them to conduct their dissertation research. Other courses preparatory to dissertation research will be determined by the student in consultation with his/her academic advisor.

Note that although GRD 717 is required, this course will not be considered in the total credit hours required for the degree.

Requirements		Hours
PhD Departmental Core		31
BST 611	Intermediate Statistical Analysis I	3
ENH 710	Grant Proposal Writing in Biomedical Sciences	1
ENH 790	Seminar: Current Topics in ENH Sciences Research	1
ENH 791	Advanced Environmental Health and Toxicology Seminar	1
ENH 796	Environmental Toxicology Laboratory Rotations	3
GRD 717	Principles of Scientific Integrity	3
Environmental Health Sciences Research Focus		22
ENH 720	Integrated Biomedical Science for Environmental Health I	10
ENH 721	Integrated Biomedical Science for Environmental Health II	8
ENH 722	Integrated Biomedical Science for Environmental Health III	3
Industrial Hygiene Focus		15
Elective* At least one elective at discretion of the student and the research advisor		
Research Hours		Variable
ENH 798	Doctoral Level Directed Res	Variable
ENH 799	Dissertation Research	Variable

Requirements		Hours
Industrial Hygiene Focus		15
BST 612	Intermediate Statistical Analysis II	3
ENH 700	Scientific Basis of Environmental Health	3
ENH 701	Environmental Chemistry	3
ENH 770	Advanced Topics in Environmental Disasters in PUH	3
ENH 705	Special Topics (Readings) in Environmental and Occupational Health	9
Electives* At the discretion of the student and the research advisor		18
Research Hours		Variable
ENH 798	Doctoral Level Directed Res	Variable
ENH 799	Dissertation Research	Variable

Environmental Health Sciences / Toxicology

School of Public Health's Environmental Health Sciences' Student Handbook

School of Public Health's Catalog

Environmental Health /Toxicology (MPH, MSPH)

The Department of Environmental Health Sciences offers Environmental Health /Toxicology in both the Master of Public Health and Master of Science in Public Health Programs

Prospective students should use this [checklist \(M.P.H.\)](#) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this [checklist \(M.S.P.H.\)](#) to obtain specific admissions requirements on how to apply to Graduate School.

MPH in Environmental Health /Toxicology (including 5th Year)

The MPH in Environmental Health / Toxicology studies the links between the environment and public health, studying all aspects of this process from initial exposure to toxicant action to science-based policy development. We train students to recognize and assess exposures, determine the toxicity risk to the public, and design and properly communicate strategies to reduce risk and help set appropriate policy.

Environmental Health Curriculum: Students pursuing the Environmental Health & Toxicology degree track must complete a total of 42 credit hours including the MPH core courses listed below.

Requirements		Hours
MPH Core		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1

Departmental Track Requirements

ENH 612	Assessing & Managing Environmental Risks	3
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 660	Fundamentals of Air and Water Pollution	3
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
Departmental Electives *		6
School Wide Requirements		
GRD 727	Writing & Reviewing Research	3
Internship		
ENH 697	Internship	3
Total Hours		42

MSPH in Environmental Health Toxicology

The MSPH program in Environmental Health Sciences/Toxicology is designed to provide an intensive educational experience for those with or without previous experience. Environmental health professionals must be able to recognize, evaluate, and control environmental situations that may lead to disease. They may also require knowledge in designing and conducting studies of environmental chemicals to assess the probability that environmental toxic agents present a risk to humans and/or the environment and to define safe limits of human exposure to them.

MSPH Degree Program Learning Objectives

The objectives of the MSPH program are to assure that students will:

- describe the distribution of chemical, physical, and biological agents in the environment and in the occupational environment;
- apply quantitative methods to measure the concentration or intensity of these agents;
- identify and describe the diseases or other adverse health effects that may result from exposure to these agents and the risk of those outcomes;
- explain and control interventions to reduce or eliminate exposures to these agents;
- recognize regulatory and management considerations relative to these agents;
- critically evaluate published scientific reports; and
- design a sound methodological study to test a new hypothesis, conduct the study, analyze the resulting data and prepare a report of the study.

Admission:

Students without previous experience, but who have a strong commitment to environmental health science may be admitted.

Curriculum:

Students must complete a total of 40 credit hours. Electives are chosen in consultation with the student's advisor and should be selected to fit the student's interests, career goals, and academic needs. The degree can be obtained in 21 months of full-time study.

Requirements	Hours
MSPH Core	13

BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 610	Prin of Epidemiologic Research	4
Departmental Track Requirements		6
ENH 612	Assessing & Managing Environmental Risks	3
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
Department Elective		3
Masters LLevel Research		13
ENH 699	Masters Level Project Research	3
ENH 699	Masters Level Project Research	3
ENH 699	Masters Level Project Research	3
ENH 699	Masters Level Project Research	4
Seminar/Journal Club		5
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
ENH 790	Seminar: Current Topics in ENH Sciences Research	1
ENH 790	Seminar: Current Topics in ENH Sciences Research	1
Total Hours		40

Occupational Health & Safety

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Health related careers are in high demand. We are searching for occupational health and safety professionals of tomorrow – bright, inquisitive students – with a desire to make a difference in the lives of others! You can make a difference in the lives of workers in your community. Our graduates are at the frontline to protect workers from injuries and illnesses. A safer, healthier workforce is a good thing for everyone. Graduates of our academic programs find rewarding and challenging careers in various employment sectors - working as team members to protect our nation's most valuable asset, **PEOPLE!**

Occupational Health and Safety Curriculum

Students pursuing the **Occupational Health and Safety** degree track must complete a total of 44-45 credit hours including the MPH core courses listed below.

Coursework

Requirements	Hours	
MPH Core		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Departmental Track Requirements		17
ENH 612	Assessing & Managing Environmental Risks	3
ENH 621	Fund of Industrial Hygiene	3
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3

ENH 670	Fund of Occupational Safety	3
ENH 680	Field Interdisciplinary Studies	1
ENH 681	Interdisciplinary Worksite Evaluations	2
ENH 691	Curr Tpc in ENH Occp Hlth Sft	1
ENH 691	Curr Tpc in ENH Occp Hlth Sft	1
Departmental Electives		
Select electives for 2-3 credit hours *		2-3
School Wide Requirements		
GRD 727	Writing & Reviewing Research	3
Internship		
ENH 697	Internship	3
Total Hours		44-45

* The department highly recommends ENH 661L (2 credit hours)

Industrial Hygiene

School of Public Health's Biostatistics Student Handbook

School of Public Health's Student Catalog

Industrial Hygiene (MPH, MSPH)

This track is designed to provide an intensive educational experience for students without previous experience but who have a strong commitment to occupational health and safety and hazardous substances. Calculus, although not required, is highly recommended. In addition to didactic coursework, these tracks require a three-month internship which is arranged by the program.

Prospective students should use this checklist (M.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (M.S.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

MPH in Industrial Hygiene

Combines didactic research instruction and applied research experience for students with or without previous work experience. The industrial hygiene program is designed to develop the students' understanding of the interrelationships between the basic sciences and the causes and prevention of occupational related diseases. Graduates of the program will be capable of developing systematic approaches to identifying and controlling problems in industrial hygiene, designing and implementing research programs to measure the level of work exposure to hazardous agents, and instituting necessary control measures.

The industrial hygiene program is a component of the Deep South Center for Occupational Health and Safety, one of 16 Education and Research Centers partially supported by the National Institute for Occupational Safety and Health (NIOSH).

Curriculum

Students must complete the basic MPH core (19 credit hours) and an additional 40 credit hours of course work. Included in the curriculum is a three-month internship in which principles learned in the classroom are

put into practice. These are generally paid positions in industry. More than 60 industries nationwide have participated in this program.

Coursework

Requirements		Hours
MPH Core		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Departmental Track Requirements		
ENH 612	Assessing & Managing Environmental Risks	3
ENH 621	Fund of Industrial Hygiene	3
ENH 624	Control of Occupational Hazards	2
ENH 625	Indust Hygiene Case Studies	2
ENH 626	Physical Agents	2
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 661L	Environmental Sampling and Analysis Laboratory	2
ENH 670	Fund of Occupational Safety	3
ENH 680	Field Interdisciplinary Studies	1
ENH 681	Interdisciplinary Worksite Evaluations	2
ENH 681	Interdisciplinary Worksite Evaluations	2
ENH 691	Curr Tpc in ENH Occp Hlth Sft	1
ENH 691	Curr Tpc in ENH Occp Hlth Sft	1
Departmental Research		
ENH 699	Masters Level Project Research	1-9
School Wide Requirements		
GRD 727	Writing & Reviewing Research (or course determined by Graduate School)	3
Internship		
ENH 697	Internship	3-9
Total Hours		53-67

MPH in Accelerated Program in Industrial Hygiene (AIHY)

This track is designed specifically for and limited to graduates of undergraduate Industrial Hygiene programs financially supported by the National Institute for Occupational Safety and Health (NIOSH). Graduates of these programs have received basic courses from NIOSH, peer-reviewed and approved Industrial Hygiene curricula, and are qualified to practice Industrial Hygiene. The Accelerated Program in Industrial Hygiene will broaden the student's public health knowledge and skills while also preparing students to take leadership roles in Industrial Hygiene.

Admission

Students who have graduated from a NIOSH funded and ABET accredited undergraduate Industrial Hygiene program and who meet the minimum requirements for admission to the School of Public Health. ABET is the Applied Science Accreditation Commission of the Accreditation Board of Engineering and Technology. Students without previous experience, but who have a strong commitment to occupational

health and safety, may be admitted. In addition to the general admissions requirements for the School of Public Health enrollees shall hold a baccalaureate degree based on a minimum of 120 semester hours or the equivalent that shall include 63 or more semester-hour credits in undergraduate or graduate-level courses in science, mathematics, engineering, and technology, with at least 15 of those at the upper (junior, senior, or graduate) level and a minimum of 21 semester-hour credits, or the equivalent, in communications, humanities and social sciences. Remedial courses, designed to remove deficiencies in the background of entering students, are inherently at a level lower than expected in college credit work. Such courses, particularly in the areas of mathematics, basic science, and communications, cannot be used to meet the minimums in curricular content requirements.

Curriculum

Students must complete the MPH Core (19 credit hours) and an additional 28 credit hours for a total of 47 credit hours. Included in the curriculum is a 3 credit hour (three-month, summer semester) internship and a 3 credit hour thesis/project requirement. The internships are generally paid positions in industry or government. Flexibility is offered in the research experience to allow highly motivated students to graduate after 12 months of study.

Coursework

Requirements		Hours
MPH Core		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Departmental Track Requirements		
ENH 612	Assessing & Managing Environmental Risks	3
ENH 625	Indust Hygiene Case Studies	2
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 680	Field Interdisciplinary Studies	1
ENH 681	Interdisciplinary Worksite Evaluations	2
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
ENH 691	Currnt Tpc in ENH Occp Hlth Sft	1
Departmental Research		
ENH 699	Masters Level Project Research	3
Departmental Electives		
Select departmental electives to meet 6 credit hours		6
School Wide Requirements		
GRD 727	Writing & Reviewing Research	3
Internship		
ENH 697	Internship	3
Total Hours		47

The Master of Science in Public Health (MSPH) in Industrial Hygiene

Curriculum with a concentration in Industrial Hygiene will provide students with an option for a more concentrated focus on industrial hygiene topics and a more intensive research experience.

MSPH Degree Program Learning Objectives

The objectives of this degree option are to:

- describe the distribution of chemical, physical, and biological agents in the occupational environment;
- apply quantitative methods to measure the concentration or intensity of these agents;
- identify and describe the diseases or other adverse health effects that may result from exposure to these agents and the risk of those outcomes;
- explain and control interventions to reduce or eliminate exposures to these agents;
- recognize regulatory and management considerations relative to these agents;
- critically evaluate published scientific reports;
- and design a sound methodological study to test a new hypothesis, conduct the study, analyze the resulting data and prepare a report of the study.

The research aspect of this curriculum is conducted under the requirements of the UAB Graduate School, and includes: formation of a research committee, defense of a research proposal, conduct of the research, preparation of a formal thesis, and presentation and defense of the thesis.

Admission

Students without previous experience, but who have a strong commitment to Industrial Hygiene, may be admitted. In addition to the general admissions requirements for the School of Public Health enrollees should have a strong background in math and science and a strong commitment to conduct research (laboratory or field based) as the MS level.

Curriculum

Students must complete a total of 56 credit hours. Electives are chosen in consultation with the student's advisor and should be selected to fit the student's interests, career goals, and academic needs. The degree can be obtained in 21 months of full-time study.

Coursework

Requirements		Hours
MSPH Core		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 611	Environmental & Occupational Exposure Assessment	3
EPI 610	Prin of Epidemiologic Research	4
Departmental Track Requirements		
ENH 612	Assessing & Managing Environmental Risks	3
ENH 621	Fund of Industrial Hygiene	3
ENH 624	Control of Occupational Hazards	2
ENH 625	Indust Hygiene Case Studies	2

ENH 626	Physical Agents	2
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 661L	Environmental Sampling and Analysis Laboratory	2
ENH 670	Fund of Occupational Safety	3
ENH 680	Field Interdisciplinary Studies	1
ENH 680	Field Interdisciplinary Studies	1
ENH 681	Interdisciplinary Worksite Evaluations	2
ENH 681	Interdisciplinary Worksite Evaluations	2
Masters Level Research		
ENH 699	Masters Level Project Research	5
ENH 699	Masters Level Project Research	5
Seminar/Journal Club		
ENH 691	CurrT Tpc in ENH Occp Hlth Sft	1
ENH 691	CurrT Tpc in ENH Occp Hlth Sft	1
ENH 691	CurrT Tpc in ENH Occp Hlth Sft	1
ENH 790	Seminar: Current Topics in ENH Sciences Research	1
Internship		
ENH 697	Internship	3
Total Hours		56

Epidemiology

Degree Offered:	Ph.D., M.P.H, M.S.P.H.
Chair:	Donna Arnett Ph.D., M.S.P.H.
Phone:	(205) 975-7699
Web site:	www.soph.uab.edu/epi
Department Contact:	Kimberly Hawkins
Department Contact E-mail:	hawkinsk@uab.edu

Prospective students should use this checklist (M.P.H) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (PhD) to obtain specific admissions requirements on how to apply to Graduate School.

Master’s Programs’ Learning Objectives:

Graduates with a Master’s degree in epidemiology are expected to:

- describe the epidemiology of important diseases, injuries, and causes of death in a population;
- understand and apply the principles of epidemiologic study design and analysis;
- recognize the circumstances in which specific designs are appropriate for an investigation and to identify strategies to minimize and prevent bias in studies;
- design data collection, entry, and management procedures for epidemiological studies;
- compute and interpret the most common epidemiological measures of disease occurrence and association and to perform hypothesis testing and interval estimation on those measures;
- understand and analyze published reports of epidemiologic studies and critically evaluate the data and conclusions presented.

In addition, graduates of the MSPH degree program are also expected to:

- propose a methodologically sound study design for the evaluation of a new hypothesis; and

- manage one or more components of a research project, including instrument design, database design and management, statistical analysis and report writing.

Admission Requirements

Applicants must meet the requirements for admission to the UAB School of Public Health and must demonstrate their aptitude for biological sciences and mathematics by virtue of their college transcripts and GRE scores. The Department of Epidemiology admits MPH students for the Fall term each year. Interested applicants should apply at: www.sophas.org. International students should also submit a World Education Services (WES/ECE, or similar) transcript evaluation along with your application materials. The deadline to apply through SOPHAS for the MPH program is April 1st each year.

A score of 35th percentile on the verbal and 40th percentile on the quantitative sections of the newly revised GRE exam. GRE exams taken prior to August 1, 2011, a minimum score of 1100 on the combined verbal and quantitative sections, with a verbal score of at least 550 (400 for MPH) and a quantitative score of at least 550, a score of 3.5 on the analytic section of the GRE test, and an undergraduate grade point average of 3.0 or better (on a 4.0 scale). The department also requires a TOEFL score of at least 250 (600 on the old scale) for all international students whose native language is not English.

For Additional Information

If you have questions please contact Dr. Muntner, Ms. Baker, or Ms. Hawkins:

Dr. John Waterbor, Department of Epidemiology, UAB School of Public Health, RPHB 227C, 1530 3rd Avenue South, Birmingham, AL 35294-0022.

Telephone 205-934-7146 (Dr. Muntner), 205-934-7128 (Judy Baker), 205-975-9749 (Kimberly Hawkins); Fax to Department of Epidemiology, 205-934-8665

E-mail pmuntner@uab.edu; janbaker@uab.edu; hawkinsk@uab.edu

Applied Epidemiology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

MSPH in Applied Epidemiology

The MSPH program in Applied Epidemiology is an academic research degree designed for students who wish to receive education and training in epidemiologic research methods. Completion of didactic course work and a thesis research project are required. This degree can be completed in 12-18 months or 4-5 semesters.

Admission: The online application to the MSPH-Applied EPI program can be submitted at www.sophas.org. International students should also submit a World Education Services (WES/ECE, or similar) transcript evaluation along with your application materials. The deadline date to apply for admission is April 1st each year. The Department of Epidemiology admits students in the Fall term each year.

Requirements		Hours
MSPH Core Requirements		25
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3

BST 613	Intermediate Statis Analy III	3
EPI 610 & 610L	Prin of Epidemiologic Research and Principles of Epidemiologic Research - LAB	4
EPI 625	Quant Methods in Epidemiology	3
Masters Level Research Requirement		Minimum of 9
EPI 699	Master's Level Project Research Epidemiology	1-9
EPI 699	Master's Level Project Research Epidemiology	1-9
EPI 699	Master's Level Project Research Epidemiology	1-9

Requirements	Hours	
Department Track Requirements	13	
EPI 623	Intro SAS Sftware	1
EPI 627	Data Anal in Epi Studies	3
BST 619	Data Collection and Management	3
BST 625	Design/Conduct Clinical Trials	3
Advance BST Elective	3	
Total Credit Hours Required	42	

Epidemiology

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Information

MPH in Epidemiology (including the 5th Year)

SOPH Catalog

This program is intended for persons who anticipate careers in public health practice. In addition, students who wish to enter doctoral-level training should consider majoring in epidemiology at the master's level. Graduates of the MPH in Epidemiology may assume faculty or research positions in academia or management positions in government or industry if they have other professional degrees (e.g., MD, DDS) as well. Graduates of the program without professional credentials generally assume mid-level positions in academia, industry or government. The MPH in Epidemiology typically takes 12 to 18 months to complete.

Admission Requirements

Applicants must meet the requirements for admission to the UAB School of Public Health and must demonstrate their aptitude for biological sciences and mathematics by virtue of their college transcripts and GRE scores. The Department of Epidemiology admits MPH students for the Fall term each year. Interested applicants should apply at: www.sophas.org. International students should also submit a World Education Services (WES/ECE, or similar) transcript evaluation along with your application materials. The deadline to apply through SOPHAS for the MPH program is April 1st each year.

Requirements	Hours	
MPH Core Requirements	23	
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 610 & 610L	Prin of Epidemiologic Research and Principles of Epidemiologic Research - LAB	4
EPI 625	Quant Methods in Epidemiology	3
HB 600	Social and Behavioral Science Core	3

HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1

Requirements	Hours	
SOPH Requirements		
GRD 727	Writing & Reviewing Research (other GRD courses may be required based on Writing Assessment Exam)	3
EPI 697	Internship	3

Requirements	Hours	
Track Requirements	7	
BST 613	Intermediate Statis Analy III	3
EPI 623	Intro SAS Sftware	1
EPI 627	Data Anal in Epi Studies	3

Requirements	Hours	
Electives	5	
EPI 601	Vaccinology	3
EPI 602	Epidemiology of Chronic Diseases	4
EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	3
EPI 604	Infectious Disease Surveillance and Control: Field Studies in Developing Countries	3
EPI 605	Epidemiology of Infectious Disease	4
EPI 607	Fundamentals of Clinical Research	3
EPI 609	Pharmacoepidemiology and Comparative Effectiveness Research	3
EPI 614	EPI Methods Applied CER	2
EPI 616	Environmental Epidemiology	3
EPI 618	Fieldwork in Public Health	2
EPI 621	HIV/AIDS and STDs	3
EPI 635	Genetics in Public Health	2
BST 619	Data Collection and Management	3
BST 626	Data Management and Reporting with SAS	3

Requirements	Hours	
EPI 695	Epidemiology Seminar	1

EPI Seminar Requirement (1 Hour) must be taken at least once. Can be taken more than once wih advisor's approval.

Requirements	Hours	
EPI 698	Master's Level Directed Research Epidemiology	1-9

Pharmacoepidemiology and Comparative Effectiveness Research

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Masters of Science in Pharmacoepidemiology and Comparative Effectiveness Research

SOPH Catalog

The MSPH-PCER program is an academic research degree that is designed to provide students with special training in Epidemiology research methods as applied to Pharmacoepidemiology and Comparative Effectiveness Research. This MSPH track will present introductory and advanced topics relevant to the field of Pharmacoepidemiology and will include material on information sources used for research in these fields, sources of bias, study designs, analytical approaches, issues of interpretation of research results, and relevant policy and regulatory activities. All trainees will complete a final thesis during their last term of enrollment or graduation term that typically will be in the form of one or more papers suitable for publication and addressing a topic in Pharmacoepidemiology and Comparative Effectiveness Research. A number of databases are available for trainee projects.

Admission: The online application to the MSPH-PCER program can be submitted at www.sophas.org. International students should also submit a World Education Services (WES/ECE, or similar) transcript evaluation along with your application materials. The deadline date to apply for admission is April 1st each year. The Department of Epidemiology admits students in the Fall term each year.

Requirements		Hours
MSPH Core Requirements		25
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
BST 613	Intermediate Statis Analy III	3
EPI 610 & 610L	Prin of Epidemiologic Research and Principles of Epidemiologic Research - LAB	4
EPI 625	Quant Methods in Epidemiology	3
Masters Level Research Requirements		Minimum of 9 hours
EPI 699	Master's Level Project Research Epidemiology	1-9
EPI 699	Master's Level Project Research Epidemiology	1-9
EPI 699	Master's Level Project Research Epidemiology	1-9
Department Track Requirements		9
EPI 609	Pharmacoepidemiology and Comparative Effectiveness Research	3
EPI 623	Intro SAS Software	1
EPI 614	EPI Methods Applied CER	2
GRD 717	Principles of Scientific Integrity	3
Track-Specific Relevant Electives:		10
BST 625	Design/Conduct Clinical Trials	3
Total Hours		43

Clinical and Translational Science

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

MSPH in Clinical and Translational Science

SOPH Catalog

There is a growing interest in medical and other health science schools in developing the clinical research skills of faculty members and fellows. This interest has been fueled by increased support from the NIH to prepare such individuals to meet the demand for clinical investigators in the field. Locally, the Schools of Medicine and Public Health have combined efforts to create a training program for young faculty members and fellows from a variety of disciplines.

This program is a post-medical or other health science degree training program, aimed primarily at fellows and faculty members interested in developing skills required for clinical research. It is anticipated that this academic training will supplement extensive training in the content area in which the student is trained, and senior mentoring in the politics and policies of project development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects. The program consists of a core set of courses common to all students, plus research elective and focus elective courses that reflect the academic interest of the student. At this time, the program can accommodate students with specific interest in Biostatistics (CRBS), **Epidemiology (CTE)**, and Health Behavior (CRHB).

Curriculum: The MSPH in Clinical and Translational Science consists of 42 semester hours. Of these, 26 hours are required, including 9 hours of specific Biostatistics courses and 8 hours of specific Epidemiology courses. The MSPH requires a research project; students must complete a minimum of 9 hours of masters research credits. Students then complete 8 hours of Clinical Research track requirements, and 8 hours of approved elective credits.

MSPH-CTE Coursework

Requirements		Hours
MSPH Core Requirements		25
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
BST 613	Intermediate Statis Analy III	3
EPI 610 & 610L	Prin of Epidemiologic Research and Principles of Epidemiologic Research - LAB	4
EPI 625	Quant Methods in Epidemiology	3
Masters Level Research		minimum 9 hours
EPI 698	Master's Level Directed Research Epidemiology	1-9
EPI 698	Master's Level Directed Research Epidemiology	1-9
EPI 698	Master's Level Directed Research Epidemiology	1-9
Requirements		Hours
Clinical Research Track Requirements		8
BST 625	Design/Conduct Clinical Trials	3
EPI 607	Fundamentals of Clinical Research	3
or BST 625	Design/Conduct Clinical Trials	
EPI 680	Topics in Clinical Research *	2
GRD 717	Principles of Scientific Integrity	3
Track-Specific Relevant Electives		9
Total Hours		42

Health Behavior

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degrees Offered:	M.P.H.; M.S.P.H.; Ph.D.
Department Chair:	Jalie Tucker Ph.D., M.P.H.
Phone:	(205) 934-6020
Department Contact:	Julie Brown
Department Contact E-mail:	jebrown@uab.edu
Web site:	http://www.soph.uab.edu/hb

Program Information and Objectives

The Department of Health Behavior aims to train health promotion specialists/behavioral scientists to conduct research, develop and evaluate programs, implement and disseminate programs and integrate ethical, cultural and social justice topics as they address the public's health.

Health Behavior MPH and PhD students learn to use theories and methods from the social and behavioral sciences to develop programs that encourage - healthy behaviors. They learn state-of-the-art techniques and methods for research and program evaluation. Doctoral students study these topics in depth as they apply their knowledge and skills to conducting research and writing funding proposals and manuscripts. Students have opportunities to become involved in faculty research projects on a broad range of health issues including infectious diseases (HIV/AIDS and other sexually transmitted diseases), tobacco, alcohol, and other substance use, and behaviors related to obesity, aging, cardiovascular disease, cancer, and intentional or unintentional injuries. .

Degree Programs

- MPH Health Behavior
- MPH Fast Track (5th Year)
- Coordinated MPH/PhD in Health Behavior and Psychology or Sociology
- Coordinated MPH/MSN in Health Behavior
- MSPH Clinical Research

Admissions Information

Deadline for All Application:	April 1 Fall Term; November 1 Spring Term
Number of Letters of Recommendation Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	For additional information please contact Ms. Julie Brown, M.S (jebrown@uab.edu, phone 205-975-8075, fax 205-934-9325).

Clinical Research

Department of Health Behavior Student Handbook

School of Public Health Catalog

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

MSPH Clinical Research

In response to interest in medical and other health science schools in developing the clinical research skills of faculty members and fellows, the Schools of Medicine and Public Health have combined efforts to create a training program for young faculty members and fellows from a variety of disciplines.

This program is a post-medical or other health science degree training program, aimed primarily at fellows and faculty members interested in developing skills required for clinical research. It is anticipated that this academic training will supplement extensive training in the content area in which the enrollee is trained, and senior mentoring in the politics and policies of project development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects. The program consists of a core set of courses common to all students, plus research elective and focus elective courses that reflect the academic interest of the student. Graduates will be able to do the following upon completion of the program:

- Design, conduct, and evaluate clinical research studies;
- Understand issues of data collection and study management;
- Follow appropriate policies and procedures relating to the utilization of human subjects in clinical research;
- Demonstrate an understanding of the ethics of research on human subjects;
- Prepare competitive applications for extramural research funding;
- Prepare manuscripts for publication in the scientific literature; and
- Critically evaluate published research.

Admission: Applicants should possess a medical or other health science professional degree. They may be in their final years of training as residents or fellows or hold positions as junior faculty members. Applicants must meet the minimum requirements for admission into the School of Public Health. The Graduate Record Examination (GRE) is required for applications to all MSPH programs in the School of Public Health. The GRE may be waived at the discretion of the committee, for applicants who have been pre-screened by the clinical investigator training grant committee of the School of Medicine. The applicant must produce three letters of reference and a letter stating that he/she will be guaranteed sufficient release time from clinical duties to be able to attend classes regularly and fulfill course requirements in a timely manner. A medical/health sciences mentor should be identified and a setting where the student can gain experience in conducting clinical research. A faculty member within the School of Public Health will be assigned as an advisor based on the stated interests of the applicant.

Curriculum: The MSPH in Clinical Research consists of a minimum of 41 credit hours. Of these, 14 hours are required, including 9 hours of specific biostatistics courses and 5 hours of specific epidemiology courses. Students then select at least 9 credit hours from a list of approved Masters Research electives, complete 9 hours of focus specific electives in Health Behavior, and take at least 9 hours of (698 level) Masters Research to fulfill the MSPH requirement for conducting a research project.

Requirements	Hours
Required Core Courses	
BST 611 Intermediate Statistical Analysis I *	3
BST 612 Intermediate Statistical Analysis II *	3
BST 625 Design/Conduct Clinical Trials	3
EPI 607 Fundamentals of Clinical Research	3
EPI 680 Topics in Clinical Research	2
Total Hours	14

Requirements	Hours
Masters Research Electives: 6 hours should be selected by faculty advisor and student	
BST 619 Data Collection and Management	3

BST 626	Data Management and Reporting with SAS	3
BST 626L	Data Management and Reporting with SAS Laboratory	0
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
EPI 625	Quant Methods in Epidemiology	3
EPI 703	Special Topics in the Epidemiology of Chronic Disease	3
EPI 704	Advanced Epidemiologic Methods	3
HCO 677	Patient-Based Outcomes Measurement	3
HB 624	Adv Theory Behav Sci	3

Requirements		Hours
Focus Specific Electives: 12 Hours		
HB 624	Adv Theory Behav Sci	3
HB 636	Developing Interventions to Promote Public Health	3
HB 641	Research Methods in Behavioral Science	3
HB 643	Health Program Evaluation	3
HB 636 : Developing Interventions to Promote Public Health	Available Spring 2014	3

Masters Directed Research: Nine hours of research (698 level) in a clinical setting (directed)

BST 698, EPI 698, HB 698, or ENH 698 (depending upon the area of study)

* Students who want to focus their degree on Biostatistics should take BST 621/622 rather than BST 611/612 since the former are prerequisites for more advanced Biostatistics focus courses. In addition, other students who wish to receive higher level mathematical training in Biostatistics could substitute BST 621/622 for BST 611/612.

Note that care must be exercised when selecting some of these courses since some have prerequisites that must be taken earlier in the sequence of classes or taken concurrently.

Health Behavior

Department of Health Behavior Student Handbook

School of Public Health Catalog

MPH Programs

The major instructional goal of the department is: to train health promotion specialists/behavioral scientists to conduct research, develop and evaluate programs, implement and disseminate programs and integrate ethical, cultural and social justice topics as they address the public's health.

The Department of Health Behavior offers the following MPH degrees

- MPH
- MPH Fast Track (5th Year)
- MPH/MSN
- MPH/PhD in Psychology or Sociology

MPH in Health Behavior (including the MPH Fast Track Program)

Students in the MPH in Health Behavior are taught methods to identify and understand factors that affect behaviors related to personal and community health and to develop and evaluate intervention programs that promote healthy lives. Students are required to complete an internship. The internship is three credit hours and takes place following the completion of core course work.

The MPH program admits students with a bachelor's degree. Students in this track take 43-46 credit hours. The number of credit hours you are required to complete is determined before admission by examining your education and professional experiences. The MPH may be completed in four semesters.

The MPH Fifth-year program admits students who are juniors at UAB. Students in this track take 43-46 credit hours. You generally complete this program one year after you complete your undergraduate degree.

Requirements		Hours
MPH Core		19
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 624	Adv Theory Behav Sci	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Departmental Track Requirements		9
HB 636	Developing Interventions to Promote Public Health	3
HB 641	Research Methods in Behavioral Science	3
HB 643	Health Program Evaluation	3
Behavioral Science Electives		9
SOPH Requirements		3-6
GRD	Writing Course	3
HB 697	Internship	3
Total Hours		43-46

Coordinated MPH/MSN in Health Behavior

The Coordinated MSN (School of Nursing)/MPH (Health Behavior) degree program is offered with the University of Alabama at Birmingham School of Nursing. This program enables you to obtain an MPH in Health Behavior simultaneously with a MSN from the School of Nursing.

The MPH degree requires a minimum of 43-46 credit hours.

Admissions: Students are admitted separately to the MPH and MSN degree programs and must meet admission requirements in both the School of Public Health and the School of Nursing.

Requirements		Hours
MPH Core (including the Integrative Experience)		19
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 624	Adv Theory Behav Sci	3
HCO 600	Introduction to Population Based Health Programs	3

PUH 695	The Public Health Integrative Experience	1
Health Behavior Track		15
HB 636 : Developing Interventions to Promote Public Health 2014	Offered Spring	3
HB 641	Research Methods in Behavioral Science	3
HB 643	Health Program Evaluation	3
HB 697	Internship	3
Any HB Elective course		3
SOPH Requirement		3-6
GRD Writing Course		3-6
Required Nursing Courses for Health Behavior Track*		6
NUR 604	Leadership in Advanced Nursing Practice Roles	3
NUR 605	Research for Evidence-Based Practice	3

* See the School of Nursing Catalog for the requirements for the MSN portion of the dual MPH/MSN degree.

Coordinated MPH/PhD in Health Behavior and Psychology or Sociology

This dual degree program is offered in cooperation with the UAB Departments of Psychology and Sociology; and the University of Alabama (Tuscaloosa) Department of Psychology. This program enables students to obtain an MPH degree in Health Behavior simultaneously with a PhD in Psychology or Sociology.

Admission: Applicants to this program must first be admitted to the PhD program of interest. Applicants must meet the minimum requirements for admission into the School of Public Health.

Coursework in Psychology

Requirements	Hours	
Core Requirements - 21 Hours		
PY 716	Intro to Statistics	3
PY 716L	Lab for Intro to Statistics	1
PY 717	Applied Statistical Methods	3
PY 717L	Lab for Appl. Stat. Methods	1
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 624	Adv Theory Behav Sci	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Department Track Requirements - 12 Hours		
HB 636 : Developing Interventions to Promote Public Health 2013	Offered Spring	3
HB 641	Research Methods in Behavioral Science	3
HB 643	Health Program Evaluation	3
HB 697	Internship	3
Health Behavior/Psychology Electives*		6
SOPH Requirements - 3 - 6 Hours		
GRD Writing Course		3-6
Total Hours		42-45

Coursework for Sociology

Requirements	Hours
Core Requirements - 19 Hours	

SOC 704	Categorical Data Analysis	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 624	Adv Theory Behav Sci	3
HCO 600	Introduction to Population Based Health Programs	3
PUH 695	The Public Health Integrative Experience	1
Approved Sociology course		3
Department Track Requirements - 9 Hours		
HB 636 : Developing Interventions to Promote Public Health 2014	Offered Spring	3
HB 643	Health Program Evaluation	3
Approved Sociology course		3
Health Behavior/Sociology Electives*		9
SOPH Requirements - 3 - 6 Hours		
HB 697	Internship	3
GRD Writing Course		3-6
Total Hours		43-46

* One course can be from the doctoral program & must be approved as a behavioral science elective

Health Education and Health Promotion

Department of Health Behavior Student Handbook

School of Public Health Catalog

Prospective students should use this checklist (PhD) to obtain specific admissions requirements on how to apply to Graduate School.

PhD in Health Education and Health Promotion

The PhD program in health education/promotion provides students with instruction and research experience to become practitioners and scientists in health education and health promotion. The program also combines the resources of academic units from the University of Alabama at Birmingham (UAB – School of Public Health, Department of Health Behavior, UAB- School of Education, Department of Human Studies), and the University of Alabama (UA – College of Human Environmental Sciences, Department of Health Science), and utilizes the research expertise common to schools of public health along with the didactic, professional emphasis found in other health education programs. The specific objectives of the program are to enable the students to:

- Develop the skills to effectively plan, implement, and evaluate health education/promotion intervention programs;
- Develop theoretical knowledge from social and behavior sciences;
- Develop the knowledge and skills to become independent researchers;
- Complete a substantive research experience integrating the first three objectives.

Admission to Ph.D. program in the SOPH Department of Health Behavior

Student applications are reviewed by the faculty in the Department of Health Behavior. Applicants should meet the admissions requirements of the graduate school, including submission of scores on the Graduate Record Exam (GRE). Admission to the program is competitive. Evidence

of scholarship, a clear statement of career goals and research interest, professional recommendations, and professional experience are among the factors receiving strong consideration. Candidates for admission must have completed a master's degree from an accredited institution in public health, health education or a related field.

The PhD program requires completion of a minimum of 67 hours of graduate credit, satisfactory performance on comprehensive exams, and completion of a doctoral dissertation.

Requirements		Hours
Health Education/Promotion Core Courses - 12 Hours		
HB 740	Advanced Health Program Evaluation Seminar	3
HB 750	Advanced Theoretical and Scientific Basis of Health Education and Promotion	3
or HB 724	Advanced Social and Behavioral Science Theory	
HB 760	Planning and Administration of Health Education and Promotion Programs	3
HB 771	Seminar in Health Education/Health Promotion Session I	1
HB 772	Seminar in Health Education/Health Promotion Session II	1
HB 773	Seminar in Health Education/Health Promotion Session III	1
Total Hours		12

Requirements		Hours
Advanced Research and Statistical Methods Courses - 16 Hours		
BST 611	Intermediate Statistical Analysis I * Pre-requisite of BST 612	3
or EPR 609	Statistical Methods and Research in Education: Intermediate	
BST 612	Intermediate Statistical Analysis II	3
or EPR 710	Computer Applications and Advanced Statistical Meth	
EPI 610	Prin of Epidemiologic Research	4
EPI 610L	Principles of Epidemiologic Research - LAB	0
HB 741	Clinical Research Methods in the Behavioral Sciences	3
HCO 728	Qualitative and Mixed Methods Research in Public Health	3
Total Hours		16

Evaluation/ Research Methods/Statistics Electives 6

Social and Behavioral Sciences Electives 9

Directed Research

Requirements	Hours
HB 798 Doctoral-Level Directed Res ^{12 hours required}	1-9

Dissertation Research

Requirements	Hours
HB 799 Doctoral Dissertation Research ^{12 hours required}	1-9

* BST 611 is the prerequisite for BST 612

** EPR 609 is the prerequisite for EPR 710

Specific courses needed for completion of the advanced research and statistical methods requirement may vary and require approval by the student's academic advisor. Specific courses for the social science concentration are selected by the student and his/her academic advisor. Students may transfer a minimum of 12 credits from comparable

graduate courses completed previously if those courses were not used to complete another degree, are graduate level, and a grade of at least a B.

Research Internship

A research internship is required. The internship gives students an opportunity to engage in a meaningful research experience by working with ongoing faculty research projects. The internship may be carried out in any one of the three academic units contributing to the PhD program or with approved research projects in other academic units at UA or UAB, or with the CDC, NIH, or other governmental or private agencies.

Comprehensive Exam

Doctoral students are required to take comprehensive examinations before proposing a dissertation. At a minimum, the exams cover the scientific and theoretical basis of health education and health promotion, the design and evaluation of health promotion programs and research methods in health promotion. Prior to taking the comprehensive exams, **the student must have completed the Health Education/Promotion Core Courses.** Students will be eligible to take part one after completing 12 hours of the core courses.

Doctoral Dissertation

The doctoral dissertation is designed to provide students with a comprehensive and original research experience, and it requires the completion of a minimum of 12 hours of dissertation credit. Students complete credits for the dissertation after completing coursework and comprehensive exams, and being admitted to candidacy. All PhD students must meet the graduation requirements of their department and the Graduate School.

Health Care Organization and Policy

Requirement	Fulfilled By:
Degree Offered:	M.P.H., M.S.P.H., Dr.PH.
Department Chair:	Meredith Kilgore, Ph.D.
Phone:	205-934-3748
Website:	http://www.soph.uab.edu/hcop
Department Contact:	Brenda Campbell
Department Contact Email:	bcampbel@uab.edu

Health Care Organization and Policy (Dr.P.H., M.P.H, M.S.P.H.)

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Program Information

Research and instructional foci in this department include health economics, public health administration and planning, health policy, outcomes research and health services evaluation. Programs in the Department of Health Care Organization and Policy (HCOP) are designed to provide training and education at the master's level for those desiring a professional career in the analysis of health services policy options, outcomes research, maternal and child health policy or in the management of public health programs. The didactic programs of the department require that students master the major concepts of:

- Health economics,
- Public health management and planning,
- Health policy,
- Outcomes research,
- Health services evaluation, and
- Policy and leadership in maternal and child health

The department offers Master of Public Health (MPH) degree options:

- MPH in Health Care Organization (HCOP)
- MPH in General Theory and Practice (GTP)
- MPH in Health Policy (HPOL)
- MPH in Public Health Preparedness Management and Policy (PHPM)
- MPH in Maternal and Child Health Policy and Leadership (MCPL)
- MSPH in Outcomes Research (OR)
- Coordinated MPH-JD in Public Health and Juris Doctor (PHJD)
- Coordinated MPH-MBA in Public Health and Business Administration (PHBA)
- Coordinated MPH-OD in Public Health and Optometry (PHOD)
- Coordinated MPH-MPA in Public Health and Public Administration (PHPA)
- Coordinated MSPH-PhD in Public Health and Psychology (HCPY)
- Coordinated MPH-MSN in Maternal and Child Health Policy
- Coordinated MPH-MSW in Maternal and Child Health Policy
- Doctoral Program in Health Care Organization and Policy

Doctor of Public Health in Health Care Organization and Policy (DrPH)

The DrPH degree is the highest professional degree in public health. The DrPH Program in HCOP develops leaders and research faculty who have proficiency in data analysis, management, critical thinking, teaching, and translating research into policy and practice. Students will be exposed to complex practical problems facing public health practitioners and policy-makers. This program, housed within the Department of HCOP has three concentrations:

1. Public Health Management
2. Maternal and Child Health Policy
3. Outcomes Research

Admissions

Requirement	Fulfilled By:
Deadline for Entry Term(s):	April 1st
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
SOPH Graduate Catalog Description:	http://www.soph.uab.edu/catalog
SOPH Admissions:	http://www.soph.uab.edu/graduate/prospective

Health Care Organization

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Master in Public Health in Health Care Organization

The MPH in health care organization is designed to train individuals for management positions in public health and other health care organizations. Students are introduced to the public health system and the fundamental skills necessary for managing health care organizations. Required coursework includes basic management disciplines and selected content in economics, finance, marketing, law and insurance.

Health Care Organization Learning Objectives

- Describe the economic, legal, organization, and political underpinnings of the US health system;
- Apply principles of management, finance, marketing, accounting and strategic planning in health care organizations; and
- Apply basic planning and management skills necessary for successful administration of health care organizations.

The Department of Health Care Organization has the following MPH Programs

- MPH in Health Care Organization (HCOP)
- MPH in General Theory and Practice (GTP)
- Coordinated MPH-JD in Public Health and Juris Doctor (PHJD)
- Coordinated MPH-MBA in Public Health and Business Administration (PHBA)
- Coordinated MPH-OD in Public Health and Optometry (PHOD)
- Coordinated MPH-MPA in Public Health and Public Administration (PHPA)
- Coordinated MPH-MSN in Maternal and Child Health Policy
- Coordinated MPH-MSW in Maternal and Child Health Policy
- Coordinated MSPH-PhD in Public Health and Psychology (HCPY)

MPH Core Curriculum - 19 hours

Requirements	Hours
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
EPI 600 Intro to Epidemiology	3
ENH 600 Fundamentals of Environmental Health Science	3
HB 600 Social and Behavioral Science Core	3
HCO 600 Introduction to Population Based Health Programs	3
PUH 695 The Public Health Integrative Experience	1

MPH in Health Care Organization (including the 5th Year and Online HCOP MPH)

SOPH Catalog

Curriculum: Students in this track take 43 credit hours. The work can generally be completed in two years or less.

HCOP MPH Track Requirements

Requirements	Hours
MPH Core Curriculum	19
GRD 727 Writing & Reviewing Research	3
HCO 697 Internship	3
Department Track Requirements	15
HCO 601 Health Economics	3
HCO 613 Health Information Techn Polic	3
HCO 615 Finance for Health Professionals	3
HCO 620 Health Ins/Managed Care	3
HCO 670 Social and Ethical Issues in Public Health	3
Electives	3
HCO 603 Public Health Policy	3
HCO 612 Strategic Management in Health Programs	3
HCO 618 Management Concepts in Public Health Programs	3
Total Hours	43

Coordinated MPH-JD in Public Health and Juris Doctor (PHJD)

SOPH Catalog

The department offers a coordinated Master of Public Health and Juris doctor degree program in cooperation with the Cumberland School of Law at Samford University, also located in Birmingham. The purpose of the program is to offer future attorneys exposure to the broad areas of public health.

Admission: Students enrolled in this program must be enrolled at the Cumberland School of Law. In order to be admitted to the coordinated programs, a student must have a GPA of 2.5 at the end of the first year of law school. A minimum law school GPA of 2.5 each semester and a minimum 3.0 GPA each term in public health are required for students to continue in the coordinated program. Interested students should contact the Office of Student and Academic Services at the School of Public Health for MPH application materials and Cumberland Law School for J.D. application materials.

Requirements	Hours
MPH Core Curriculum	19
HCO 697 Internship	3
GRD 727 Writing & Reviewing Research	3

Requirements	Hours
Department Track Requirements	6
HCO 601 Health Economics	3
HCO 603 Public Health Policy	3

Choose One of the following - 3

Requirements	Hours
Transfer of Credit For Following Law School Courses	13
Law 502: Torts	4
Law 506: Contract I	3

Law 507: Contracts II	2
Law 526: Business Organizations	4

Requirements	Hours
Total Hours	47

Coordinated MPH-MBA in Public Health and Business Administration (PHBA)

SOPH Catalog

This program's purpose is to provide students without relevant advanced degrees and/or without previous public health experience with those skills necessary for advanced positions in health management. Also, students with experience and/or a relevant advanced degree who wish to pursue a health management credential with broad applicability should seriously consider this coordinated program.

Admission: Students admitted to this program will have at least a bachelor's degree. Students are admitted separately to the MPH and MBA programs. The School of Business should be contacted for MBA application materials and the School of Public Health should be contacted for MPH application materials. The GRE will be accepted in lieu GMAT. An undergraduate calculus course is also required for admission. If an applicant does not meet this requirement additional information can be found at MBA Admission website <http://www.uab.edu/business/degrees-certificates/mba/mba-admission>.

Requirements	Hours
MPH Core Curriculum	19
HCO 697 Internship	3
GRD 727 Writing & Reviewing Research	3

Requirements	Hours
Department Track	12
HCO 601 Health Economics	3
HCO 603 Public Health Policy	3
HCO 613 Health Information Techn Polic	3
HCO 620 Health Ins/Managed Care	3
Elective	3

Requirements	Hours
MBA Track Requirements	33-36
MBA 601 Accounting and Finance for Managers	3
MBA 608 Strategic Cost Analysis and Decision Making	3
MBA 619 Information Technology and Business Strategy	3
MBA 621 Topics in Corporate Finance	3
MBA 631 Management and Organizations	3
MBA 634 Strategic Management	3
MBA 637 Operations and Supply Chain Management	3
MBA 642 Economics for Managers	3
MBA 651 Marketing Strategy	3
MBA 662 Quantitative Analysis for Business Managers	3
Elective	3
MBA 624 Global Financial Management	3
MBA 635 International Business Policy	3
MBA 654 International Marketing	3
Total Hours	76-79

Coordinated MPH-OD in Public Health and Optometry (PHOD)

SOPH Catalog

Admission: Applicants to the concurrent MPH/OD program must meet the following requirements: enrollment and good standing in the School of Optometry, interview by MPH/OD committee in the School of Optometry, approval and recommendation by the dean of the School of Optometry, and apply and be accepted for admission to the School of Public Health.

Curriculum: Students in the concurrent MPH/OD program are expected to complete the curriculum of the optometry professional program, and a total of 45 credit hours in the MPH program. Work in the public health program can be completed over a four-year period, including summers. Students may begin their MPH program in the summer prior to their entering the Optometry professional program.

Requirements	Hours
MPH Core Curriculum	19
HCO 697 Internship	3
GRD 727 Writing & Reviewing Research	3

Requirements	Hours
Department Track Requirements	21
HCO 601 Health Economics	3
HCO 603 Public Health Policy	3
HCO 686 Integrative Health Policy Analysis	3
Electives	12
Total Hours	46

Coordinated MPH-MPA in Public Health and Public Administration (PHPA)

SOPH Catalog

The MPH/MPA degree program provides students with the knowledge base of public health and the skills required to work effectively in a responsible, administrative position in the public sector. Through this coordinated degree program, students in the MPH program can satisfy some of their requirements through courses in the MPA program and vice versa.

Admission: Students entering this program must meet the minimum requirements for admission into the School of Public Health. The student must apply to and be admitted to both programs. The graduate School should be contacted for MPA application materials and the School of Public Health should be contacted for MPH application materials.

Requirements	Hours
Core Requirements	16-19
HCO 600 Introduction to Population Based Health Programs	3
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
or	
MPA 607 Quantitative Methods for PA	
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Intro to Epidemiology	3
HB 600 Social and Behavioral Science Core	3
PUH 695 The Public Health Integrative Experience	1

SOPH Requirements	3
GRD 727 Writing & Reviewing Research	3
HCO 697 Internship	3

Requirements	Hours
MPA Core Requirements	27
MPA 600 Administrative Ethics	3
MPA 601 The Public Policymaking Process	3
MPA 602 Administrative Theory and Behavior	3
MPA 603 Public & Nonprofit Budgeting	3
MPA 604 Human Resources Management	3
MPA 605 Information Technology in the Public Sector	3
MPA 606 Foundations of PA Research	3
MPA 674 GIS for Managers	3
MPA 697 Grad Res Paper or Portfolio Mt	3

Requirements	Hours
MPH Public Health Concentration Elective	12
HCO 601 Health Economics	3
HCO 603 Public Health Policy	3
HCO 612 Strategic Management in Health Programs	3
HCO 672 Perinatal Hlth Issues	3
HCO 620 Health Ins/Managed Care	3
HCO 640 Disaster and Emergency Management	3
HCO 641 Health Preparedness and Response Policy	3
HCO 643 Emergency Preparedness Exercise, Evaluation & Communication	3
Total Hours	61-64

Coordinated MPH-MSN in Maternal and Child Health Policy

SOPH Catalog

The coordinated MPH/MSN degree is designed to address the dynamic health care needs of women and children. This program prepares nurse practitioners to participate in the development, implementation, and evaluation of innovative maternal and child health (MCH) programs and policies. This dual degree builds on the synergy generated through two complementary curriculum tracks. In this educational experience, advanced clinical skill is combined with expertise in program planning and evaluation.

Admissions: Students are admitted separately to the MPH and MSN degree programs and must meet admission requirements in both the School of Public Health and the School of Nursing at UAB.

Requirements	Hours
MPH Core Curriculum	19
HCO 697 Internship	3
GRD 727 Writing & Reviewing Research	3

Requirements	Hours
Department Track Requirements	15
HCO 601 Health Economics	3
HCO 605 Fundamental of MCH Part 1:Issues, Program and Policies	3
HCO 606 Fundamentals of Maternal and Child Health Part II: Application of Essential MCH Skills	3

HCO 618	Management Concepts in Public Health Programs	3
HCO 625	Adv. Leadership/Prac MCH Pt. I	1
HCO 626	Advanc Ldrshp Prac MCH II	1
HCO 627	Adv Ldrshp Prac MCH III	1
Selectives that are shared with School of Nursing		6
NUR 602	Issues Affecting Advanced Nursing Practice	3
NUR 612	Advanced Pathophysiology	3
Total Hours		46

Coordinated MPH-MSW in Maternal and Child Health Policy

SOPH Catalog

The MPH/MSW degree program is coordinated between the School of Social Work at the University of Alabama (MSW) and the Department of Health Care Organization and Policy (HCOP). The coordinated program prepares social workers for interdisciplinary practice in public health programs concerned with the promotion and improvement of the health of diverse populations, including women, children, and families. Students who have been admitted to the MSW program in the School of Social Work and wish to pursue the coordinated degree option should contact the Department of Health Care Organization and Policy. Students will attend classes in Tuscaloosa and Birmingham.

Admissions: Students who choose the coordinated degree plan will be required to first secure admission to the University of Alabama (Tuscaloosa) School of Social Work (for the MSW) and, at the end of the first semester, to apply separately to the Department of Health Care Organization and Policy (for the MPH). Acceptance in the MSW program does not automatically insure acceptance into the MPH program and vice versa.

Requirements		Hours
MPH Core Curriculum		19
HCO 697	Internship	3
GRD 727	Writing & Reviewing Research	3
Requirements		Hours
EPI 623	Intro SAS Software	1
Requirements		Hours
Department Track Requirements		15
HCO 601	Health Economics	3
HCO 605	Fundamental of MCH Part 1: Issues, Program and Policies	3
HCO 606	Fundamentals of Maternal and Child Health Part II: Application of Essential MCH Skills	3
HCO 612	Strategic Management in Health Programs	3
HCO 619	Social Work in Public Health	3
Social Work course to be counted toward total MPH hours		3
SW 510: Human Behavior in Social Environments	(taken at UA School of Social Work)	3
Total Hours		44

Coordinated MSPH-PhD in Public Health / Doctor of Philosophy (Psychology)

SOPH Catalog

The department offers coordinated Master of Science in Public Health and PhD degrees in cooperation with the department of Psychology at the University of Alabama at Birmingham or at the University of Alabama (Tuscaloosa).

Admission: To be considered for this program, students must first be admitted to the PhD program in clinical psychology at UAB or in the PhD in psychology at the University of Alabama (Tuscaloosa). Students must meet the admission criteria for the School of Public Health and remain in good standing in their PhD program.

Requirements		Hours
MSPH Core Curriculum		9
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
EPI 610	Prin of Epidemiologic Research	4
PhD Track		21
HCO 601	Health Economics	3
HCO 670	Social and Ethical Issues in Public Health	3
HCO 687	Empirical Methods for Health Research	3
HCO 677	Patient-Based Outcomes Measurement	3
HCO 721	Clinical Decision Making and Cost Effectiveness Analysis	3
HCO 722	Cost-Effectiveness Research Methods	3
HCO 691	Policy Analysis: Modeling & Simulation	3
Electives: Selected by faculty advisor and student to complete total hours required		3
BST 613	Intermediate Statis Analy III	3
BST 625	Design/Conduct Clinical Trials	3
HB 714	Survey Research Methods	3
HCO 675	Improving Health Care Quality and Outcomes	3
HCO 680	Aging Policy	3
HCO 694	Special Problems in Policy Analysis	3
Masters Level Research		9
HCO 699	Master's Level Project Research Health Care Organization and Policy	9
Minimum Credit Hours Required		42

Students receiving a MSPH are required to complete a 13 hour online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) may be waived from this requirement by permission of the Associate Dean.

General Theory and Practice

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

MPH in General Theory and Practice

SOPH Catalog

This program is available to students who prefer a generalist background rather than a more specialized track with additional course requirements. The instructional program is formulated by students and their advisors

to meet the specific needs of practicing professionals and to provide a broad, interdisciplinary review of public health theory and practice.

Admission: Students must meet the general admission requirements for the Master of Public Health degree program. Only persons with doctoral level professional degrees and/or five years or more of senior level experience in public health or a closely allied field may apply to this program. Students who have been admitted to medical school also may apply to this program. Applicants with a previously earned doctoral credential may, upon request, be waived from the requirements to submit a GRE score.

Core Requirements

Requirements		Hours
MPH Core Requirements		19
HCO 600	Introduction to Population Based Health Programs	3
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
PUH 695	The Public Health Integrative Experience	1
SOPH Requirements		
GRD 727	Writing & Reviewing Research	3
HCO 697	Internship	3
Requirements		Hours
Department Track Requirements		9
HCO 601	Health Economics	3
HCO 603	Public Health Policy	3
elective		3
Other Electives		9
electives		9
Total Hours		43

Health Policy Quantitative Policy Analysis

Prospective students should use this checklist (M.P.H) to obtain specific admissions requirements on how to apply to Graduate School.

Master of Public Health (in Health Policy) Quantitative Policy Analysis

SOPH Catalog

The MPH in health policy is designed to train policy analysts at the master's level to work in government agencies, voluntary health organizations, local, state, and federal legislative bodies, managed care organizations, private industry, and consulting firms. The quantitative variation emphasizes skills appropriate to an active mid-level research career.

Requirements		Hours
Core Requirements		19
HCO 600	Introduction to Population Based Health Programs	3
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3

EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
PUH 695	The Public Health Integrative Experience	1

Requirements		Hours
SOPH Requirements		
GRD 727	Writing & Reviewing Research	3
HCO 697	Internship	3

Requirements		Hours
Department Track Requirements		15
HCO 601	Health Economics	3
HCO 603	Public Health Policy	3
HCO 687	Empirical Methods for Health Research	3
HCO 691	Policy Analysis: Modeling & Simulation	3
BST 619	Data Collection and Management	3
Elective		3
Total Hours		43

Public Health Preparedness Management and Policy

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

MPH in Public Health Preparedness Management and Policy (PHPM)

SOPH Catalog

This specialized degree covers all hazards preparedness topics including, event typologies, response organization, leadership and management, hazard and risk assessment policy development and evaluation and risk communication.

Admission: Applicants must meet the general admission requirements for the Master of Public Health degree program. Applicants with a previously earned doctoral degree may be waived from the requirement to submit a GRE score. Students may apply for admission to this program at any time and once admitted may begin taking classes the next semester.

Curriculum: Students in this track take 46 credit hours. The work can generally be completed in two years. All of the required courses for this program are offered on weeknights.

Requirements		Hours
MPH Core Requirement		19
HCO 600	Introduction to Population Based Health Programs	3
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
PUH 695	The Public Health Integrative Experience	1

Requirements		Hours
SOPH Requirements		
GRD 727	Writing & Reviewing Research	3
HCO 697	Internship	3

Requirements		Hours
Department Track Requirements		46
HCO 640	Disaster and Emergency Management	3
HCO 641	Health Preparedness and Response Policy **	3
HCO 643	Emergency Preparedness Exercise, Evaluation & Communication	3
HCO 670	Social and Ethical Issues in Public Health	3
HCO 698	Master's Level Directed Research Health Care Organization and Policy	1-9
ENH 610	Environmental Disasters	3
EPI 605	Epidemiology of Infectious Disease	4
Total Hours		46

** Course offered every other year: HCO 641 odd years and ENH 610 even years

Maternal and Child Health Policy and Leadership

Prospective students should use this checklist (M.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (Dr.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

MPH in Maternal and Child Health Policy and Leadership

SOPH Catalog

The MPH programs in the maternal and child health concentration are designed to educate individuals who will plan, administer, and evaluate programs in maternal and child health. The programs provide information about the special problems faced by women and children, including children with special health care needs, and their families. The programs develop and integrate skills from maternal and child health, health policy and leadership and demonstrate their application in problem solving and systems development.

Requirements		Hours
MPH Core Requirements		19
HCO 600	Introduction to Population Based Health Programs	3
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Intro to Epidemiology	3
HB 600	Social and Behavioral Science Core	3
PUH 695	The Public Health Integrative Experience	1

SOPH Requirements

Requirements		Hours
GRD 727	Writing & Reviewing Research	3
HCO 697	Internship	3

Requirements		Hours
Department Track Requirements		15
HCO 601	Health Economics	3
HCO 605	Fundamental of MCH Part 1:Issues, Program and Policies	3

HCO 606	Fundamentals of Maternal and Child Health Part II: Application of Essential MCH Skills	3
HCO 618	Management Concepts in Public Health Programs	3
HCO 625	Adv. Leadership/Prac MCH Pt. I	1
HCO 626	Advanc Ldrshp Prac MCH II	1
HCO 627	Adv Ldrshp Prac MCH III	1

Requirements		Hours
Departmental Electives		6
HCO 603	Public Health Policy	3
HCO 608/708	Reproductive Health	3
HCO 611/711	Child Health and Development:Womb to Young to Adulthood	3
HCO 613	Health Information Techn Polic	3
HCO 615	Finance for Health Professionals	3
HCO 620	Health Ins/Managed Care	3
HCO 631	Public Health Demography	3
HCO 670	Social and Ethical Issues in Public Health	3
HCO 672	Perinatal Hlth Issues	3
HCO 624	Healthy Lifestyles for MCH Populations: Intergrating Nutrition Physi Activity Comm-based Approach	3
Total Hours		46

Outcomes Research

Prospective students should use this checklist (M.S.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

Prospective students should use this checklist (Dr.P.H.) to obtain specific admissions requirements on how to apply to Graduate School.

MSPH in Outcomes Research

SOPH Catalog

The health care field is placing increasing emphasis on the identification and measurement of clinical decision making and cost/utility analysis. Continuing pressure for the development and measurement of both efficient and effective protocols and health care policies is the driving force underlying this emphasis. Increasingly, employers are seeking qualified analysts to study treatment effectiveness. Graduates of this track will work in clinical settings, government agencies, managed care organizations, insurance companies, health associations, pharmaceutical firms, and consulting firms analyzing cost effectiveness, utilization and treatment effectiveness.

Admission

The track is open to students with a bachelor's degree and strong mathematics preparation. An undergraduate grade point average of a 3.0 on a 4.0 scale and a minimum combined score of 1080 on the verbal and quantitative portions of the Graduate Record Examination General Test (GRE) is desirable for admission consideration.

Requirements		Hours
MSPH Core Requirements		10
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
EPI 610	Prin of Epidemiologic Research	4
EPI 610L	Principles of Epidemiologic Research - LAB	0

Requirements		Hours
Outcomes Research Track		21
HCO 601	Health Economics	3
HCO 621	Clinic Decisions/Cost Analysis	3
HCO 622	Cost Effect Resear Mthds	3
HCO 670	Social and Ethical Issues in Public Health	3
HCO 677	Patient-Based Outcomes Measurement	3
HCO 687	Empirical Methods for Health Research	3
HCO 691	Policy Analysis: Modeling & Simulation	3
Electives: Selected by faculty advisor and student to complete total hours required for degree		3

Requirements		Hours
Masters Level Research		9
HCO 699	Master's Level Project Research Health Care Organization and Policy	1-9
HCO 699	Master's Level Project Research Health Care Organization and Policy	1-9
HCO 699	Master's Level Project Research Health Care Organization and Policy	1-9
Total Hours		43

Students receiving a MSPH are required to complete a 3 hour Online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) may be waived from this requirement by permission of the Associate Dean.

The Graduate School

Today's researchers, scientists, and new professionals face an increasingly competitive world. This is true not only in their fields of study, but in the "survival skills," or areas of professional presenting, university teaching, writing and publishing, interdisciplinary collaboration, and the winning of grants and fellowships. Indeed, many leading institutions view these communication abilities as prerequisites for career advancement. This is why the UAB Graduate School's Professional Development Program offers ongoing support for graduate students, post-doctoral fellows and visiting scholars who want to take advantage of the school's resources to enhance their skills. The Professional Development program offers elective graduate credit courses, day-long workshops, and free mini-workshops in a variety of areas, such as

- Career Support & Advancement
- Academic writing & Publishing
- Teaching at the College Level
- Presentation & Discussion Skills
- Academic Interactions & Pronunciation

Click on Professional Development Courses and Professional Development Workshops for a detailed list of offerings. Check out the Current Schedule for a list of available offerings, or visit the Professional Development website for detailed information on our free mini-workshops.

Graduate School Professional Development Program

graduate/profdev

Program director:	Dr. Julia Austin
Phone:	(205) 975-6359
Email:	jaustin@uab.edu
Web site:	www.uab.edu/graduate/profdev

Program Information

These courses and workshops are offered to improve the academic and professional communication skills of graduate students, postdoctoral fellows, and other UAB research staff with the goals of supporting scholarship, research integrity, productivity, effective communication, and the development and refinement of professional skills.

Course Descriptions

AAP-Administration Planning Courses

AAP 634. Advanced Administration of Staff Personnel. 0 Hours.
Principles governing personnel management in public school systems.
Prerequisite: Admission to EdL Doctoral program.

AAS-African American Studies Courses

AC-Accounting Courses

AC 500. Financial Accounting I. 3 Hours.
Accounting cycle, environment of financial accounting, conceptual framework of financial accounting, financial statements, time value of money, cash and receivables. Enrollment requires permission of the M.Ac. Program Director.

AC 501. Cost Accounting. 3 Hours.
Basic Theory and procedures involving cost determination, analysis, and control. Cost allocations, applications of overhead, budgeting, standard costs, job order, process and byproduct costing, spoilage, and quantitative techniques. Enrollment requires permission of M.Ac. Program Director.

AC 502. Income Taxation I. 3 Hours.
Fundamentals and basic concepts of various entities, with emphasis on federal income taxation of individuals. Enrollment requires permission of M.Ac. Program Director.

AC 504. Accounting Information Systems. 3 Hours.
Transaction processing cycles of accounting system; internal control, development, and control of information systems; emerging development of information technology. Enrollment requires permission of the M.Ac. Program Director.

AC 510. Financial Accounting II. 3 Hours.
Continuation of AC 500. Inventories, plant assets, intangible assets, current liabilities, long term debt and stockholders' equity. Enrollment requires permission of M.Ac. Program Director.

AC 513. Internal Auditing. 3 Hours.
Theory and practice of internal auditing and application of internal auditing principles and techniques to selected audit problems. Enrollment requires permission of M.Ac. Program Director.

AC 514. Governmental and Not-for-Profit Accounting. 3 Hours.
Special features of budgetary and fund accounting as applied to municipalities, other government units, and to other non-profit entities. 999999.

AC 523. External Auditing. 3 Hours.
Study of the external audit function and the essential standards that govern audit practice. Enrollment requires permission of M.Ac. Program Director.

AC 530. Financial Accounting III. 3 Hours.
Dilutive securities, earnings per share, investments, accounting for income taxes, accounting changes and error analysis, statement of cash flows, retirement benefits, leases and selected disclosures. Enrollment requires permission of the M.Ac. Program Director.

AC 540. International Accounting: From a User's Perspective. 3 Hours.
Development of international accounting knowledge needed to make informed decisions in global business environment.
Prerequisites: AC 200 [Min Grade: C] and AC 201 [Min Grade: C]

AC 541. International Accounting: Study Abroad. 3 Hours.
Development of international accounting knowledge needed to make informed decisions in global business environment through study abroad.
Prerequisites: AC 540 [Min Grade: C]

AC 564. Accounting Internship. 3 Hours.
Work experience enabling students to better integrate academic knowledge with practical applications by exposure to accounting practice and business environment.

AC 572. Forensic Accounting and Information Technology Auditing. 3 Hours.
Introduction to the practice of forensic accounting and its relationship to auditing in settings characterized by extensive reliance on information technology. An emphasis on audit methodology as applied to accounting information systems.

AC 573. Fraud Examination. 3 Hours.
Advanced forensic accounting concepts with a primary focus on occupational fraud and abuse--its origins, perpetration, prevention, and detection.

AC 574. Forensic Accounting Practicum. 1-3 Hour.
Work experience requiring the application of forensic accounting concepts and methods. Preq: C or better in AC 572, AC 573 and LS 571.
Prerequisites: AC 573 [Min Grade: C] and LS 571 [Min Grade: C] and AC 572 [Min Grade: C]

AC 580. Advanced Financial Accounting. 3 Hours.
Business combinations, consolidated financial statements, multinational accounting and partnerships. Preq: AC430 and graduate standing, and approval of M.Ac. program director.

AC 590. Advanced Topics in Accounting. 3 Hours.
Contemporary professional accounting issues.

AC 600. Current Topics Fin. Acct.. 3 Hours.
Consideration of recent pronouncements from various authoritative bodies such as the FASB and SEC through research projects and case discussions.

AC 606. Advanced Auditing and Attestation. 3 Hours.
Development of auditing to its present status; authoritative bodies influencing auditing; new developments. Preq: Admission to M.Ac. program or graduate standing and approval of the M.Ac. program director.

AC 612. Corporate Governance. 3 Hours.
This course examines the process by which individuals inside and outside a publicly-traded or other complex organization seek to govern the organization's activities, including boards of directors, shareholders, management, independent auditors, internal risk managers, and the Securities and Exchange Commission.

AC 617. Technology Based Business Process Reengineering. 3 Hours.
This course addresses concepts and applications of business process management in conjunction with project management and systems development techniques and tools. Emphasis is placed on the Association of Business Process Management Professionals' body of knowledge. Enrollment requires permission of M.Ac. Program Director.

AC 620. Tax Entities. 3 Hours.
Basic research tools in taxation; selected parts of Internal Revenue Code and Regulations; tax planning techniques.

AC 649. Directed Research. 3 Hours.
Supervised study of topics not covered in regular courses.

AC 672. Advanced Information Technology Auditing. 3 Hours.

IT auditing with a focus on the role of IT audit in the financial audit profession, professional standards, and professional organizations. An emphasis on IT audit methodology as applied to financial audits and other public accounting audit services. Preq: Graduate standing, or permission of the instructor.

AEB-Applied Environ Biotech Courses**AEB 600. Environmental Law. 3 Hours.****AEL-Area Educ Leadership Courses****AEL 590. Research Methods in Education. 3 Hours.**

This class provides insights into planning and implementing a research protocol. Step by step information will be provided to assist students in answering questions related to designing an action research project.

AEL 602. Advanced Educational Leadership. 3 Hours.

Basic concepts, group interaction on selected presentation of assigned research. Prerequisite: Admission to EdL Doctoral program. 3 hours.

AEL 650. Organizational Theory. 3 Hours.

An exploration of the relationship among concepts, generalizations, and theoretical models in the behavioral and social sciences. The application of these to administrative practice in educational settings is addressed.

AEL 651. Educ Strategic and Operational Planning: Theory and Practice. 3 Hours.

This class will assess current strategies in building plant operations, safety, bullying prevention, and student success. Candidates will create operational designs to support student learning based on Building Plant Operation.

AEL 671. Survey of (the Research on) Instructional Supervision. 3 Hours.

A critical examination, interpretation, and evaluation of significant current and classical writings in the field of instructional supervision with particular emphasis on research findings, the emergence of instructional supervision perspectives, issues, and controversies across the literature, and applications for supervisory practice and instructional leadership roles.

Prerequisites: AEL 633 [Min Grade: C]

AFS-Aerospace Studies Courses**AH-Administration Hlth Serv Courses****AH 700. Health Economics. 3 Hours.**

Economic concepts and their relevance to health care industry; financing and delivery arrangements employed in U.S. health care system; role of economic factors in development of public policy and implications of changes in public policy.

AH 701. Administrative Theory. 3 Hours.

History of, recent contributions to, and current issues in administrative theory and management; focus on evolution of management thought and research and on developing areas of research interest that will contribute to field.

AH 702. Growth and Development of the U.S. Health Care System. 3 Hours.

Historical development of U.S. health care system; implications for solution of current problems.

AH 703. Philosophy of Science. 3 Hours.

Systems of thought and activities in theory-building process, deriving hypotheses from literature, understanding scientific theory, philosophy of science; applications to health services administration.

AH 704. Multivariate Analysis. 3 Hours.

Application of multivariate statistical techniques; emphasis on application to health-related research questions and interpretation.

AH 705. Health Care Finance. 3 Hours.

Financial management functions, third-party reimbursement, determination of costs and charges, analysis of financial positions, working capital management, budgeting, capital expenditure analysis, and case studies.

AH 706. Strategic Management Theory and Research. 3 Hours.

Current and historically important research in field of strategic management, including major streams of research, role of strategic management in management disciplines, relationships to other disciplines, and pedagogical approaches used in graduate and undergraduate strategy courses.

AH 707. Research Methods. 3 Hours.

Issues of research design and research methods for organizational studies and health services research; integration of knowledge from quantitative courses with areas of research interest in students' chosen fields.

AH 708. Dissertation Research Methods. 3 Hours.**AH 709. Accounting for Management. 3 Hours.**

Accounting for Management.

AH 710. Comparative Health Systems. 3 Hours.

This course allows students to compare the U.S. health care delivery system with approaches used in other countries and to identify health system reform efforts occurring in selected global regions. Emphasis will be placed on the role of the health system within selected forms of government and at various levels of economic development.

AH 712. Research in Organizational Behavior. 3 Hours.

Examination of topics and empirical research in organizational behavior; emphasis on important issues in field, including areas of controversy and contemporary interest.

AH 714. Marketing Strategy and Research. 3 Hours.

Examination of development of marketing strategy and strategic management process; exploration of research topics and implications of literature.

Prerequisites: AH 706 (Can be taken Concurrently)

AH 715. Research in Organizational Theory. 3 Hours.

Topics and research in organization and management theory applied to health services organizations, including organization-environment relations, population ecology, interorganization relations, and strategic alliances.

AH 716. Macroenvironmental Analysis. 3 Hours.

Examination of research literature that addresses external and internal environmental factors affecting strategic management.

Prerequisites: AH 706 [Min Grade: C]

AH 718. Strategic Implementation and Evaluation. 3 Hours.

Examination of current research on role of information systems in strategic management.

AH 719. Marketing Theory. 3 Hours.

AH 720. Continuing Seminar. 2 Hours.

Presentations by faculty and Ph.D. candidates concerning issues in particular areas of specialization. May be repeated for credit.

AH 721. Principles of Applied Research. 3 Hours.

This course covers the following topics: systems of thought and activities in theory-building process, deriving hypotheses from literature and understanding their role in addressing health management issues, understanding scientific theory, ethical issues and principles in applied research for health services administration.

AH 722. Regression Analysis. 3 Hours.

Various approaches to regression analysis, including ordinary least squares and probability models, such as logit and probit.

AH 723. Research in Organizational Theory II. 3 Hours.

Reserch Organization Therapy II.

AH 724. Research in Organizational Behavior II. 3 Hours.**AH 725. Financial Management. 3 Hours.****AH 726. Corporate Capital Structure and Analysis. 3 Hours.****AH 727. Applied Multivariate Statistic. 3 Hours.**

This is a survey course on the application of multivariate techniques in health care management research. The course focuses on application of multivariate statistical methods to health administration research questions, with emphasis on interpretation within real healthcare management problems.

AH 731. Administrative Theory and Practice. 3 Hours.**AH 732. Organizational Behavior. 3 Hours.****AH 750. Modern Marketing Concepts. 3 Hours.****AH 751. Marketing Policy Seminar. 3 Hours.****AH 775. Strategic Planning and Management Health Care Organizations. 3 Hours.**

Assessment of strategic management literature applied to health services organizations, exploration of strategy formulation, strategic content, and implementation and evaluation of topics for health care organizations.

Prerequisites: AH 706 [Min Grade: C]

AH 780. Strategic Information Systems. 3 Hours.

Examination of current research on role of information systems in strategic management and sources available to health care organizations for strategic decision support.

Prerequisites: AH 706

AH 788. Independent Studies. 3 Hours.**AH 789. Independent Studies. 3 Hours.****AH 790. Independent Study and Research. 1-12 Hour.**

Independent Study and Reserch in Administration Health Services. Can be taken from 1-12 hours graduate credit.

AH 797. Independent Studies. 1-3 Hour.**AH 798. Non-Dissertation Research. 1-6 Hour.**

Non dissertation research credits. Can be taken 1 to 6 graduate credits.

AH 799. Dissertation Research. 1-6 Hour.

Dissertation Research. Must be admitted to doctoral candidacy. Must have 2 semesters before graduation.

Prerequisites: GAC D

AHD-Adm Hlth Services Dsc Courses**AHD 705. Health Care Finance. 3 Hours.**

Financial management functions, third-party reimbursement, determination of costs and charges, analysis of financial positions, working capital management, budgeting, capital expenditure analysis, and case studies.

AHD 706. Strategic Management Theory and Research. 3 Hours.

This course enables students to become well-versed in the healthcare strategic management scholarly literature; and ultimately contribute to it. Mastering the healthcare strategy literature requires different skills than those needed to manage an organization strategically. Thus, this course focuses on the relevant literature and not on the process of strategic planning or management.

AHD 707. Research Methods. 3 Hours.

This course introduces methods and issues relevant to research in the business disciplines and in health services. The various business disciplines and the broad field of health services draw heavily from the social and behavioral sciences as the basis for much of their theoretical and empirical work. This course will focus on issues that are relevant generally to social science research, with the goal of applying that information to research in health services.

AHD 710. Comparative Health Systems. 3 Hours.

This course allows students to compare the U.S. health care delivery system with approaches used in other countries and to identify health system reform efforts occurring in selected global regions. Empahsis will be placed on the role of the health system within slected forms of government and at various levels of economic development.

AHD 711. Health Systems Leadership. 3 Hours.

Evidence based materials used to teach skills to develop an understanding of leadership theories and application through the use of fundamental leadership principles proven to be successful in the healthcare industry.

AHD 714. Marketing Strategy and Research. 3 Hours.

This course will introduce the doctoral student to the study of marketing strategy through an examination of the literature in the field. The course is intended to provide a broad background for understanding and conducting research in this area. As such, it will require students to draw on their knowledge of other functional and organizational topics as well as other social sciences (e.g., psychology, sociology, and economics) to better understand the subject of marketing strategy from an academic and organizational perspective.

AHD 715. Research in Organization Theory. 3 Hours.

Course designed to develop the student's ability to use theory based research in health-care organizations. This course will cover the major theoretical perspectives on organizations and will link these to contemporary empirical studies. Special perspectives on organizations and will link these to contemporary empirical studies. Special focus in placed on exploring the link between theory and research exhibited in this empirical work to enable students to develop the capability of using theory to guide their own research.

AHD 716. Macro-Environmental Analysis. 3 Hours.

Macro-environmental analysis is strategic in nature and will focus on specific macro-environmental conditions or policies that may impact the delivery and financing of health care services and product. Macro-environmental analysis is traditionally the first step in the development of a strategic plan; sometiems referred to as external market analysis or political, economic, social, and technological (PEST) analysis.

AHD 722. Regression Analysis. 3 Hours.

Various approaches to regression analysis, including ordinary least squares and probability models, such as logit and probit.

AHD 727. Applied Multivariate Statistics for Health Administration Research. 3 Hours.

This is a survey course on the application of multivariate techniques in health care management research. The course focuses on application of multivariate statistical methods to health administration research questions, with emphasis on interpretation within real health care management problems.

AHD 730. Health Econ & Insurance. 3 Hours.

Development of economic principles and describes system of health care financing and delivery in the United States, providing a basis for analyzing health management and policy options.

AHD 735. Healthcare Quality Improvement. 3 Hours.

Policy issues and managerial methods related to quality and safety in healthcare organizations. Role of senior executives, board members, physician leaders in quality improvement and in creating a quality-focused organizational culture. Public and private sector approaches to quality measurement and improvement.

AHD 775. Strategic Planning and Mgt. 3 Hours.

Assessment of strategic management literature applied to health services organizations, exploration of strategy formulation, strategic content, and implementation and evaluation of topics for health care organizations.

AHD 780. Strategic Information Systems. 3 Hours.

Examination of current research on role of information systems in strategic management and sources available to health care organizations for strategic decision support.

AHD 798. Non-Dissertation Research. 1-6 Hour.

Mentored research to design a study addressing a significant healthcare delivery problem.

AHD 799. Dissertation Research. 1-6 Hour.

Mentored research to conduct a study addressing a significant healthcare delivery problem.

AHS-Allied Health Sciences Courses**AHS 501. Organizational Studies in Health Care. 4 Hours.**

Behavioral science concepts including leadership, managing change, negotiating and conflict resolution, team building, organizational assessment, marketing, and entrepreneurship.

Prerequisites: AHS 302 [Min Grade: C]

AHS 516. Financial Management in Health Care Organizations. 3 Hours.

Overview of financial management functions at departmental level; budgeting and cost analysis for department-level operations and capital expenditures.

Prerequisites: AC 200 [Min Grade: C] and AC 201 [Min Grade: C] and AHS 330 [Min Grade: C]

AHS 530. Health Care Delivery and Reimb. 3 Hours.

Overview of U.S. health care system; current issues in health care policy; introduction to reimbursement methods for health care facilities and providers.

AHS 532. Continuum of Long Term Care. 3 Hours.

Survey of providers of long term and elder care, including scope of services provided, review of reimbursement methodologies, clientele served, and political issues affecting their operational practices. Permission of Instructor.

AHS 535. Survey of Clinical and Administrative Info. Systems. 3 Hours.

Survey of Clinical and Administrative Information Systems.

AHS 590. Leadership Skills for Health Professionals. 3 Hours.

Introduction to the application of leadership concepts, theories, and principles in health care organizations to motivate personnel to productive action and performance improvement.

AHS 605. Instructional Media and Methods in Allied Health Area. 3 Hours.

Developing instructional objectives and teaching plans; designing evaluation methods; developing and presenting classroom instruction.

AHS 683. Practicum in Teaching I in Allied Health Area. 3 Hours.

Supervised delivery of classroom-based instructional unit; supervised delivery of Web-based instructional unit.

ANTH-Anthropology Courses**ANTH 500. Capstone Sem & Practicum Anth. 6 Hours.**

This six-hour capstone course will engage students in scientific research, hands-on learning, teaching, and public outreach. The course will include the development of teaching tools (multimedia teaching kits, designed and created by students) and materials used in outreach activities such as the creation of a website, DVDs, posters, and information pamphlets. The capstone course is designed for students to synthesize and apply knowledge learned in previous anthropology courses, and to provide research-driven experiences in public and academic communication and outreach. Knowledge from previous experiences will contribute to new knowledge and the development of research projects with concrete applications for the public and the Birmingham community.

ANTH 601. Forensic Anthropology. 4 Hours.

Forensic Approaches to Osteology Applied human osteology, emphasizing ability to identify age, sex, and population type of skeletal material. Effects of disease and behavior on bones.

ANTH 602. Conquest of Mexico. 3 Hours.

This course examines the Spanish conquest of Mexico from both Spanish and indigenous perspectives. It further surveys the institutionalization of Spanish control over the fallen Aztec Empire and the broader intellectual and material consequences of the conquest.

ANTH 603. Classics in Ethnography. 3 Hours.

This course surveys a selection of classic descriptive accounts of human culture. It is reading intensive and covers works that helped shape the discipline of anthropology and that are illustrative of particular moments in the history of the discipline.

ANTH 605. Advanced Cultural Anthropology. 3 Hours.

Advanced Cultural Anthropology Critical review of theoretical approaches in cultural anthropology.

ANTH 608. Advanced Linguistic Anthropology. 3 Hours.

Advanced LINGUISTIC Anthropology Historical development of theory and field practice of linguistics; psycholinguistics, sociolinguistics, nonverbal communication, semiotics, and ethnosemantics; applied linguistics.

Prerequisites: ANTH 120 [Min Grade: C]

ANTH 609. Advanced Archaeological Anthropology. 3 Hours.

Advanced Archaeological Anthropology Principal theoretical approaches to 19th/20th century archaeology; historical, processual, and post-processual.

ANTH 610. Advanced Biological Anthropology. 3 Hours.

Advanced Biological Anthropology Human evolution, primatology, race, human genetics. Tasks performed by physical anthropologists.

ANTH 611. Field Archaeology. 6 Hours.

Field Archaeology Archaeological field and laboratory techniques, including excavation, surveying, and artifact analysis and description; general problems of archaeological interpretation.

ANTH 613. Human Osteology. 4 Hours.

The identification of human skeletal remains. This laboratory/lecture course provides the groundwork for much of the work in physical anthropology. The first course of the sequence into Anth 401/601.

ANTH 614. Geoarchaeology. 3-6 Hours.

Survey of geological methods as applied to archaeological questions. Practicum in geoarchaeological laboratory and analytic methods using samples from archaeological sites in Alabama and the Middle East.

ANTH 615. Ethnographic Field Methods. 3-6 Hours.

Ethnographic Field Methods Classroom instruction and practical experience in techniques of ethnographic fieldwork, including participant observation, household surveys, structured and unstructured interviewing, and genealogies.

ANTH 617. Origins of Agriculture. 3 Hours.

Survey of evidence for animal and plant domestication and reasons for spread of food production.

ANTH 619. Food and Culture. 3 Hours.

This course is designed to present a broad view of the role of food in human culture through time and in a variety of geographic settings, offering students and opportunity to reflect on the cultural meanings of food in human life. Class lectures, assigned readings, and films will be used to enhance each student's understanding of the subject from a cross cultural perspective. We will examine the biological basis of diet how foodways develop and change, how and why anthropologists study diet, and variations in foodways around the world.

ANTH 620. Computers and Statistics in Anthropology. 1-3 Hour.

Computers and statistical applications in anthropology.

ANTH 622. Landscape Archaeology. 3 Hours.

The course will cover the techniques and strategies employed by archaeologists to reconstruct past landscape, which involves scientific testing, remote sensing, GIS, survey, excavation and environmental analysis. Examples will be drawn from projects across diverse landscape types in Europe, the Middle East, Africa, Central America and Asia. In-field and laboratory application of techniques will be emphasized.

ANTH 624. The Law of Historical and Cultural Resources. 2 Hours.

This survey course will familiarize students with federal and state laws and regulations relevant to archeology and anthropology, such as the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act. It will also introduce them to other legal issues such as obtaining National Register listings, preservation easements and federal income tax rehabilitation credits.

ANTH 625. African-American Archaeology. 3 Hours.

African American Archaeology is one of the better established research interests within U.S. Historical Archaeology. This course will examine the development of the archaeology of the African diaspora from its beginnings in the 1960s to the present day. Its principal focus will be the plantation of the Southern United States. The course will include an examination of history of the plantation economy as well as an exploration of issues currently of interest to archaeologists studying the archaeological record of African American life.

ANTH 626. Archaeology of the Pacific Islands. 3 Hours.

Holistic preview of Pacific Island societies in the past, drawing from archaeological literature and ethnographic, linguistic, and biological data. Issues of historic contact, historic archaeology, prehistory, and cultural development in the regions of Polynesia, Melanesia, and Micronesia will be addressed with attention to problems and contributions to anthropology.

ANTH 628. Comparative Religion. 3 Hours.

Human behavior in relation to the supernatural; religion as a system of social behavior and values; theories of religion.

ANTH 629. Egypt: Arch Field School. 6 Hours.

Two week field school in Egypt. Students will visit Egypt old and new, including Islamic Cairo, Coptic churches, the pyramids of Giza, Alexandria, the tombs and temples of Luxor (Valley of the Kings), Aswan (Abu Simbel), and an archaeological excavation. Experience Egyptian folklore through dance and musical performances.

ANTH 630. Zooarchaeology. 3-6 Hours.

This course includes an introduction to methods and theories of zooarchaeological research. Practical experience in processing, identification, and interpretation of animal bone remains from archaeological sites forms a large part of class time.

ANTH 632. Geographical Information Systems and Anthropology. 3 Hours.

Survey of the use of geographical information systems in the study of Global, regional, and local socio-cultural patterns.

ANTH 633. Anthropology of Development. 3 Hours.

Effects of Western penetration into indigenous societies and role of anthropologists in development projects in the Third World.

ANTH 634. Observing the Earth from Space. 3 Hours.

The course will give students the ability to analyze remotely sensed data from satellite images. Students will learn about the physics and mathematics behind remote sensing. They will also learn about the wide range of satellite images and techniques to analyze them via ERDAS Imagine, ER Mapper and other programs. Applications of remote sensing to a variety of fields will form a key component of the class. The course will culminate in a term project involving remote sensing applications to UAB faculty-led initiatives in health, medicine, geography and anthropology. There will be a weekly lab component of the course.

ANTH 635. Ethnomedicine and Ethnopsychiatry. 3 Hours.

Ethnomedicine and Ethnopsychiatry Approaches and contributions of anthropology to study of health, sickness, and healing. Physical environment and human adaptations as key determinants of health systems; culturally defined concepts of sickness, health, and healing; healing as social, as well as physiological, activity. Topics may include life stages, medical knowledge among different human groups, impact of culture contact on medical systems, ecological balance and population control, cultural definitions and treatment of abnormal behavior, healers, health and supernatural, social roles of sick, and illness and social control.

ANTH 636. Community Internship. 3-6 Hours.

Application of anthropological approaches to the efforts of a public or private sector. Institutional approval of both the host institution and the department of anthropology required before registration.

ANTH 637. Real World Remote Sensing App. 3 Hours.

This course will be offered as a research seminar focusing on real world applications of remote sensing technology. Students will work closely with UAB professors and scientists at NASA's Marshall Space Flight Center in Huntsville doing original remote sensing research on new satellite datasets. These datasets cover diverse areas including terrorism, global warming, health, anthropology / archaeology, atmospheric studies, urban expansion and coastal management. Students will be responsible for analyzing the satellite imagery and presenting papers to NASA.

ANTH 640. Arch and Hist Bible Lands. 3 Hours.

Archaeology and History of the Bible Lands. Examination of region spanning modern Syria, Lebanon, Israel, and Jordan from 10,000-585 BC.

ANTH 641. Anthropology of Human Rights. 3 Hours.

Examination of conceptual, political, and legal aspects of human rights from an anthropological perspective. Topics considered may include: state violence; the history of human rights claims; the opposition of cultural rights and human rights claim; human rights as a form of political discourse; human rights practices in select contemporary settings.

ANTH 642. Historical Archaeology. 3 Hours.

This course involves all stages of archaeological field work at a historical archaeology site. Students will learn survey skills, excavation, mapping, recovery, and post-field analysis techniques.

ANTH 645. Medical Anthropology. 3 Hours.

This course explores the bio-cultural basis of health and cross-cultural variation in illness and healing which includes theoretical bases of medical anthropology, comparative health care systems, and social, political, and economic issues related to health care delivery.

ANTH 646. Explorers, Mummies and Hieroglyphs. 3 Hours.

This course provides a thematic approach to pharaonic Egypt in general, with one portion covering diverse aspects such as geography, an overview of the history of Dynasties 1-31, society and government, daily religion, mortuary religion, architecture, literature, the military, trade, economy, and daily life. Another portion of the course provides several documentaries regarding early to more recent explorers and Egyptologists. The third focus introduces Egyptian hieroglyphs in eight grammar classes and follow-up user-friendly, in-class exercises, aiming to enable students to translate basic hieroglyphic texts.

ANTH 647. Peace Studies. 3 Hours.

Intensive exploration of concepts and issues involved in the study of peace, social justice, nonviolence and conflict resolution. Students will engage in an in-depth examination and critique of anthropological approaches to peace and the associated theoretical and practical problems and applications.

ANTH 649. Egyptian History & Arch. 3 Hours.**ANTH 650. Nationalism Ethnicity and Violence. 3 Hours.**

Social and cultural analysis of ethnicity and nationalist ideologies particularly where these have led to violent confrontations within modern nation-states. Considers primordialist versus constructionist theories of difference; the varying weight to be attributed to political, historical and cultural factors in the study of nationalism; and the politics of culture vs the culture of politics.

ANTH 651. Globalization Migration Transnationalism and Anthropology. 3 Hours.

This course will examine the convergence of the anthropological approach with the forces of globalization, migration, and transnationalism phenomena which have been described as both liberating and limiting.

ANTH 653. Primatology. 3 Hours.

Biology, behavior, and distribution of living non-human primates. Emphasis on field studies of old-world monkeys and apes.

ANTH 655. Archaeology of Alabama. 3 Hours.

This course will review the archaeology of Alabama from per-European and historical perspectives. Topics covered may include industrial archaeology, Native American prehistory, and field work may be included.

ANTH 657. Anthropology of Gender. 3 Hours.

Cultural construction of gender differences in human societies; shifting definitions of proper male and female roles across cultures and through time.

ANTH 658. Human Sexuality. 3 Hours.

This course will explore human sexuality and gender from an anthropological perspective, including biological and cultural perspectives, as well as the areas where anthropology meets psychology. The evolution of sexual behavior in humans and in non-human primates will be examined, as well as how sexuality is embedded in socio-cultural context both across and within societies.

ANTH 659. Politics, Drugs and Society in Latin America. 3 Hours.

This course will examine the role of drug production and the drug trade in the economic and political life of Latin American societies. Viewed historically and ethnographically, the course will include coverage of the traditional uses of drugs in indigenous societies as well as the more recent globalization of the industry.

ANTH 660. Ecological Anthropology. 3 Hours.

Examines interactions among behavioral, technological, organizations, and ideological features of human cultures that serve to adapt societies to their physical environment.

ANTH 661. Historical Ecology. 3 Hours.

This course explores the topic of Historical Ecology and examines the relationship between humans and their environments from the perspectives of history, anthropology, archaeology, ecology, and biogeography.

ANTH 663. Urban Anthropology. 3 Hours.

Human life in cities from cross-cultural perspectives; process of urbanization in ancient civilizations, colonial empires, and modern-day Third World.

ANTH 664. Political Anthropology. 3 Hours.

The Comparative analysis of political structures and process throughout the world, focusing especially on non-Western forms; a survey of anthropological attempts to understand the complex interplay of culture and power in human societies.

ANTH 665. Classics in Ethnography. 3 Hours.

This course surveys a selection of classic descriptive accounts of human cultures. It is a reading intensive course covering works that helped shape the discipline of anthropology or that are illustrative of particular movements in the history of the discipline.

ANTH 667. Museum Studies. 3 Hours.

This course uses case studies, analysis of topical issues, and problem-based learning exercises to explore the many aspects of museum studies relevant to the administration and management of not-for-profit museums. This course provides an interdisciplinary introduction to museum work.
Prerequisites: ANTH 106 [Min Grade: C]

ANTH 669. Ethnographic Perspectives In Rural Mexico. 3 Hours.

Comparative and historical analysis of rural Mexican communities, emphasizing the impact of recent NAFTA-related economic policies and democratic political reforms.

ANTH 671. Evolution of Human Carnivory. 3 Hours.

In this course, students will use analytical methods from zooarchaeology and taphonomy as well as observation of non-human primates and contemporary hunter-gatherers to investigate the paleoecology of carnivory during the evolutionary history of the human lineage.

Prerequisites: ANTH 102 [Min Grade: C] or ANTH 211 [Min Grade: C] or ANTH 453 [Min Grade: C] or ANTH 694 [Min Grade: C] or ANTH 610 [Min Grade: C]

ANTH 681. Anthropology and the Health Professional. 3 Hours.

Introduction to anthropological theory and practice most relevant to the health care professions (e.g., medicine, nursing, public health, psychology, etc.) Emphasis will be given to anthropological perspectives on the practice of health care as well as practical applications of anthropology in providing health care to culturally diverse peoples.

ANTH 682. Voyage in Anthropology. 6 Hours.

This six hour course will engage students in scientific research, hands-on-learning, teaching, and public outreach. The course will include the development of teaching tools (multimedia teaching kits, designed and created by students) and materials used in outreach activities such as the creation of a website, DVD's posters, and information pamphlets. This course is designed for students to synthesize and apply knowledge learned in previous anthropology courses, and to provide research driven experiences in public and academic communication and outreach. Knowledge from previous experience will contribute to new knowledge and the development of research project with concrete applications for the public and the Birmingham community.

ANTH 685. Foundations of Symbolism. 3 Hours.

Study of symbolic forms in myth and ritual and overview of theoretical approaches.

ANTH 690. Research Methods. 3 Hours.**ANTH 691. Special Problems in Cultural Anthropology. 1-6 Hour.**

Special Problems in Cultural Anthropology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in cultural anthropology.

ANTH 692. Special Problems in Archaeology. 1-6 Hour.

Special Problems in Archaeology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in archaeology.

ANTH 693. Special Problems in Linguistics. 1-6 Hour.

Special Problems in Linguistics Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in linguistics.

ANTH 694. Special Problems in Biological Anthropology. 1-6 Hour.

Special Problems in Biological Anthropology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in special topics in biological anthropology.

ANTH 695. Special Problems in Multimedia Anthropology. 1-6 Hour.

Supervised study of multimedia applications to anthropological topics. Specific problem area addressed to be determined by student and instructor interest.

ANTH 697. Special Topics in Anthropology. 3 Hours.

Topics vary. See class schedule for topic.

ANTH 699. Thesis Research. 1-6 Hour.

Thesis Research Independent development of research project.

Prerequisites: GAC M

ARA - Arabic Courses**ARH-Art History Courses****ARH 507. The Art of Rome. 3 Hours.**

Covers Ancient Rome, but focuses on Medieval through early Baroque painting, sculpture, and architecture. Examines the city of Rome over time. Also considers the impact of the papacy on the city and its use of ancient Roman models.

ARH 519. Arts of Death in the Middle Ages. 3 Hours.

The visual culture of death and the afterlife from the Roman catacombs to cadaver tombs, 300-1500.

ARH 521. Italian Renaissance Art. 3 Hours.

The visual arts of the Italian Renaissance (1300-1550) in their historic context.

ARH 522. The Birth of Painting: Portable Pictures Across Renaissance Europe. 3 Hours.

The emergence of modern easel painting, 1300-1600.

ARH 523. Study Abroad: European Art. 3 Hours.

On-site study of art and architecture in Europe.

ARH 524. Northern Renaissance Art. 3 Hours.

The visual arts of the Northern Renaissance (1300-1600) in their historic context.

ARH 530. Eighteenth Century Art in Europe. 3 Hours.

Visual culture in Eighteenth Century Britain and France including study of Eighteenth Century holdings in the Birmingham Museum of Art.

ARH 531. European Painting in the Seventeenth Century. 3 Hours.

Painting in Europe from Italian and Spanish Baroque through the Dutch Golden Age.

ARH 535. Arts of Power in Early Modern Europe. 3 Hours.

The visual arts in service of kings, popes, and the people, 1300-1700.

ARH 540. Nineteenth Century Art I: Neoclassicism Romanticism and Realism. 3 Hours.

Painting, sculpture, and graphic arts in Europe, emphasizing France, 1780-1850.

ARH 541. Nineteenth Century Art II: Impressionism, Post-Imm. 3 Hours.

Painting, sculpture, and graphic arts in Europe, 1860-1900.

ARH 550. American Art to 1900. 3 Hours.

Painting, sculpture, and architecture in the U.S., with an emphasis on 19th century.

ARH 560. Twentieth Century Art to 1945. 3 Hours.

Painting, sculpture, and architecture in Europe and the United States, 1900-1945.

ARH 561. Modern Design. 3 Hours.

History of modern design. Will examine various design disciplines, design theory, well as the relationships between design, fine art, architecture and popular culture.

ARH 564. Art Since 1945. 3 Hours.

Painting, sculpture, and architecture, primarily in the United States, 1945 to the present.

ARH 565. Aspects of Contemporary Art. 3 Hours.

Topics in contemporary art, ca. 1970 to the present. Course offerings will vary from year to year and will study a specific historical moment, medium, theme, or subject. Prerequisite: ARH 204 or permission of instructor.

ARH 567. Modern Architecture. 3 Hours.

History of modern architecture, covering examples from the late 18th century to the present and emphasizing the United States.

ARH 568. Race and Representation. 3 Hours.

History of 20th-century African American art in context of contemporary theories of identity and in relation to African art. Includes study of objects in the Birmingham Museum of Art.

ARH 570. The Art and Culture of China. 3 Hours.

An in-depth survey of the art and culture of China from the neolithic era through the eighteenth century.

ARH 571. Topics in Asian Cinema. 3 Hours.

This course offers students an introduction to a vital aspect of contemporary Asian culture, recognizing that film can be an important focus of contemporary cultural commentary and critique. The course presumes no prior knowledge of Asia or cinema and its artistic tradition. The goal of the course is to view and discuss, as a class, approximately ten films, emphasizing an understanding of their cultural background and an appreciation of their aesthetic merits as films and cultural settings in Asia. Attendance at weekly screenings is mandatory.

ARH 573. Japanese Prints and Printmakers. 3 Hours.

History of Japanese wood-block prints and printmakers from the seventeenth through the twentieth centuries.

ARH 574. Chinese Painting. 3 Hours.

Painting and painting theory through the eighteenth century.

ARH 575. Japanese Art. 3 Hours.

Art and culture of Neolithic era through Nineteenth century.

ARH 577. Art and Architecture of India. 3 Hours.

Explores the visual culture of South Asia from the Indus Valley Civilization until the beginning of British rule of India. ca. 2500 BCE - 1700 CE.

ARH 578. Buddhist Arts of Asia. 3 Hours.

Study of Buddhist art and architecture in Asia, with an emphasis on the original context and function of painting, sculpture, and monuments. The specific historical and cultural theme will vary with each course offering.

ARH 579. Study Abroad: Art and Culture of South Asia. 3 Hours.

This course allows students to become immersed in the art and culture of Asia through direct experience in the field. Focus will be primarily on South Asia but may vary with each course offering to include Nepal, Tibet, and Southeast Asia. Preliminary lectures in Birmingham and significant written assignments required.

ARH 580. Art Criticism and Theory. 3 Hours.

A topics course on subjects in art criticism and theory. The specific focus will vary by instructor and may emphasize either non-Western or Western theories, criticisms, and approaches.

ARH 581. Special Topics: Early Modern Art. 3 Hours.

Special topics in the arts of the Early Modern period in the Western Art tradition. Subject will vary with each offering.

ARH 582. Special Topics: Modern Art. 3 Hours.

A special topics course on subjects in the Modern period of the Western tradition, beginning in the later eighteenth century. Specific course topics will vary by semester.

ARH 583. Special Topics: Gender and the Visual Arts. 3 Hours.

Topic will vary, depending on instructor. This course will address ways in which gender has affected the history of artistic practice and patronage. It will consider such issues as the gendering of pictorial practice and space, strategies of representing gendered subjects, and the impact of women as patrons of art and architecture.

ARH 584. Special Topics: Contemporary Art. 3 Hours.

Special topics in the arts of the Contemporary period in the Western art tradition. Subject will vary with each offering.

ARH 585. Special Topics: Museum Studies. 3 Hours.

Museum operation; organization and preparation of exhibitions; cataloging objects in collection; experience with UAB Institute of Visual Art and Birmingham Museum of Art.

ARH 586. Special Topics: South Asian Art. 3 Hours.

Special topics in the arts of South Asia. Subject will vary with each offering.

Prerequisites: ARH 203 [Min Grade: C]

ARH 587. Special Topics: Field Study. 3 Hours.

Trips to prominent museums and galleries in United States or to art centers of foreign countries. Preliminary lectures in Birmingham and significant written assignments required.

ARH 588. Special Topics: East Asian Art. 3 Hours.

Special topics in the arts of East Asia. Subject will vary with each offering.

ARH 590. Seminar: Art Theory. 3 Hours.

Seminar in Art Theory. Subject will vary with each offering.

ARH 592. Museum/Gallery Internship. 3 Hours.

Through active participation in the daily operations of a museum, gallery, or art space, students will acquire direct working knowledge of cooperating art institution. Students will be required to work at the institution a minimum of 10 supervised hours per week during the term. Permission of instructor required. May be repeated to a maximum of 6 semester hours.

ARH 593. Seminar: South Asian Art. 3 Hours.

Seminar in the arts of South Asia. Subject will vary with each offering.

ARH 594. Seminar: East Asian Art. 3 Hours.

Seminar in the arts of East Asia. Subject will vary with each offering.

ARH 595. Seminar: Early Modern Art. 3 Hours.

Seminar in Early Modern Art. Research seminar focused on topics in the visual arts of Europe and its colonies 1300-1750. Subject will vary with each offering.

ARH 596. Seminar: Modern Art. 3 Hours.

Seminar in Modern Art. Subject will vary with each offering.

ARH 597. Seminar: Contemporary Art. 3 Hours.

Seminar in Contemporary Art. Subjects will vary with each offering.

ARH 630. Seminar: Early Modern Art. 3 Hours.

Seminar in Early Modern Art.

ARH 640. Seminar: Modern Art. 3 Hours.

Seminar in Modern Art.

ARH 660. Seminar: Contemporary Art. 3 Hours.

Seminar in Contemporary Art.

ARH 670. Seminar: South Asian Art. 3 Hours.

Seminar in South Asian Art.

ARH 680. Methods and Approaches to the History of Art. 3 Hours.

This literature-intensive course covers the historiography of the field and a range of theoretical approaches. Should be taken in the first semester of enrollment in the M.A. program.

ARH 698. Independent Studies. 2-6 Hours.

Independent Study Topics vary. Permission of instructor required.

ARH 699. Thesis Research. 3,6 Hours.

Thesis Research. Must be admitted to master level candidacy to take this course. At least 6 graduate credits needed for graduation.

Prerequisites: GAC M

ARS-Art Studio Courses**ARS 500. Drawing. 3-6 Hours.**

Prerequisites: ARS 200 [Min Grade: C] and ARS 300 [Min Grade: C]

ARS 506. Digital Filmmaking. 3 Hours.

Technical and conceptual issues will be addressed as well as producing a short film based project.

ARS 507. Ethnographic Filmmaking. 3-6 Hours.

Students will document and analyze aspects of human social life using film and video. They will develop an understanding of the visual syntax and narrative structure of successful ethnographic and documentary films through discussion and criticism in the classroom as well as through short film projects of their own.

ARS 510. Painting. 3-6 Hours.

Prerequisites: ARS 210 [Min Grade: C] and ARS 310 [Min Grade: C]

ARS 520. Sculpture. 3-6 Hours.

Prerequisites: ARS 220 [Min Grade: C] and ARS 320 [Min Grade: C]

ARS 522. Sculpture Internship. 3 Hours.

Advanced independent study with direct working knowledge of sculpture with qualified arts professionals.

ARS 530. Ceramic Sculpture. 3 Hours.

Prerequisites: ARS 230 [Min Grade: C] and ARS 330 [Min Grade: C]

ARS 540. Printmaking. 3 Hours.

Prerequisites: (ARS 240 [Min Grade: C] and ARS 340 [Min Grade: C]) or (ARS 241 [Min Grade: C] and ARS 341 [Min Grade: C])

ARS 560. Graphic Design. 3 Hours.**ARS 561. 3D Modeling. 3 Hours.**

3D Modeling is an introduction to 3D computer graphic arts. Students will learn 3D space and form, how to model buildings and architectural structures, how to compose a scene, surface properties, lighting and rendering.

ARS 570. Photography. 3 Hours.**ARS 575. Photography. 3-6 Hours.**

This course will study large scale and multiple print techniques and will continue working on medium and large format cameras.

Prerequisites: ARS 475 [Min Grade: C]

ARS 579. Studio Internship in Photography. 3 Hours.

This course will provide students with direct working knowledge with the field of professional photography in the Birmingham area through a program of internships at cooperating institutions, studios, and businesses. The student will be required to work at the cooperating agency a minimum of 16 supervised hours per week during the term.

ARS 580. Art Experiences in the Teaching of Art N-12. 3 Hours.**ARS 588. Seminar in Time Based Media. 3 Hours.****ARS 590. Studio Problems. 3-6 Hours.****ARS 592. Studio Internship. 3 Hours.**

This course will provide students with direct working knowledge of the studio arts and/or gallery practices through an internship at cooperating studios, institutions, and businesses specializing in specific disciplines in the visual arts. The student will be required to work at the cooperating agency a minimum of 8-15 supervised hours per week during the term.

ARS 595. Art Studio Seminar. 3-9 Hours.

Specialized advanced studio problems with permission of the instructor.

Prerequisites: ARS 100 [Min Grade: C] and ARS 101 [Min Grade: C] and ARS 102 [Min Grade: C] and ARS 103 [Min Grade: C]

AS-American Studies Courses**ASEM-Adv Safety Engineering Courses****ASEM 601. ASEM Seminar. 0 Hours.**

Seminar focusing on student research and guest presentations of various topics of interest to safety and risk management engineers and personnel.

ASEM 610. Intro to System Safety. 3 Hours.

Best practice in any business sector requires the pursuit of a triple bottom line - protecting people, planet, and profit. This course provides an overview of system safety in general and Prevention through Design in particular and explores their efficacy in helping companies achieve a bottom line that is socially, environmentally, and financially rewarding. Topics of inquiry include the processes of hazard analysis and risk assessment, the concept of "acceptable" risk, the safety decision hierarchy of controls, safety standards (the mandatory minimum vs. the voluntary best practice), safety as a cost control strategy, and the critical elements of a comprehensive, advanced safety program. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour online forum is required. This course's forum is typically held on Sunday from 1:30-3:00pm CDT. This course must be taken during the first semester.

ASEM 611. Hazard Analysis & Waste Elim. 3 Hours.

Hazards have the potential to cause harm to people, planet, and profits. Hazard analysis is a process that begins with the identification of a hazard and proceeds into an estimate of the severity of harm or damage that could result if the potential is realized and a hazard-related incident occurs (ASSE TR-Z790.001 – 2009). This course examines engineering techniques utilized to systematically and logically identify and analyze hazards in the workplace. These techniques include preliminary hazard list (PHL), preliminary hazard analysis (PHA), system hazard analysis (SHA), subsystem hazard analysis (SSHA) and others. Students work in teams to use these techniques to retrospectively analyze a real-world disaster. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 1:30-3:00pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 612. Engineering Risk. 3 Hours.

Engineering risk is defined both quantitatively and qualitatively as an estimate of the probability that a hazard-related incident will occur and of the severity of harm or damage that could result. This course provides students with tools to assess and reduce safety risks in their own company. These tools include risk assessment matrices, probabilistic risk assessment (PRA) measures, including event tree analysis, fault tree analysis, and other prevention through design concepts. The role of a structured, formalized decision analysis process in preventing serious injuries and fatalities is also explored. Students engage in a risk mitigation decision analysis project, which is specific to their company and/or business sector. Guest lecturers from diverse industries discuss their experiences in assessing and managing risk. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 1:30-3:00pm CDT.

Prerequisites: (ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]) and (ASEM 611 [Min Grade: C] or EGR 611 [Min Grade: C])

ASEM 613. Human Performance and Engineering Design. 3 Hours.

Companies can miss important opportunities to eliminate waste if they rely primarily on training to prevent human error. This course explores the historical perspective on human error and serious injury. The course material will provide a solid understanding of the principles of occupational biomechanics and human tolerance to injury with focus on human anthropometry and mechanical work capacity. This course also includes studies of human reliability, static analysis of systems in equilibrium and mechanical systems, design and performance. Due to the quantity of back related injuries and related lost time in the workplace, back pain and injury is studied along with the effect of vibration on the human body. Real-world case studies provide for application of the engineering hierarchy of controls: hazard elimination, hazard substitution, engineering controls, warnings, administrative behavior controls, and personal protective equipment. The course also examines the design aspects of ergonomics, the biomechanical engineering basis of injury prevention, and the long term economic consequences of seemingly minor injuries. In semester projects, students perform incident investigations using biomechanical and other data. After gathering and analyzing data to determine injury causation, they will identify and re-design error-provocative environments in their own workplaces. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 1:30-3:00pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 614. Engineering Ethics and Acceptable Risk. 3 Hours.

This course explores the economic, social, and political consequences of safety risk and considers provocative real world dilemmas: What is acceptable risk? Are the fundamental canons of engineering ethics contrary to the concept of acceptable risk? What is the worth of human life? Students will conduct critical reviews of corporate safety and ethics policies from market leaders in all major industries as well as their own company. Real-world case studies provide the framework for exercises in resolving conflicts of interest and avoiding the dilemma of "whistle blowing." Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 3:00-4:30pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 615. Lead thru Climates of Change. 3 Hours.

All progressive companies are moving toward greater sustainability - protecting people, planet, and profits. To guide their companies through these changes and integrate safety into the priorities at the executive level, safety engineers and professionals must have strong leadership skills. This course explores engineering leadership best practices, including the eight steps of transformational leadership - creating a sense of urgency, creating a guiding coalition, developing a vision and strategies, communicating the vision, empowering broad-based action, generating short term wins, consolidating gains and anchoring the culture. Guest lecturers from diverse industries discuss their experiences in managing change in today's global business environment. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 616. Policy Issues in Prevention through Design. 3 Hours.

This course provides an overview of best practices in four major policy areas: (1) cost-benefit analysis; (2) corporate culture and the "HR Department"; (3) standards, codes, and regulations; and (4) strategic alliance development. Case studies are used to illuminate both the role of engineers and other safety professionals in shaping public policy on the local, national and international levels and the ethical challenges they encounter. The significance of an organization's corporate culture in developing and implementing advanced safety management plans is also explored. Students conduct "gap analyses" of their company's policies by comparing them to best practices and identifying unintended consequences of poor safety policy in their own business and industry sector. Students will engage in discussion board posts on contemporary policy issues and participate in exercises related to federal rulemaking. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 3:00-4:30pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 617. Crisis Leadership and Safety-Critical Design. 3 Hours.

Unique technical and leadership skills are required to avert or manage a crisis. This course teaches students those skills in an experiential learning environment. Case studies of real-world industrial and environmental disasters provide the framework for exploring critical human-machine interfaces; crisis communication; coping with people in recovery and developing and implementing a business continuity response. Guest lecturers from diverse backgrounds will discuss their experiences in managing crisis events. Students will engage in discussion board posts and develop a Business Impact Analysis report for their work environment or business unit. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 3:00-4:30pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 618. Intrapreneurship & Cal Risk. 3 Hours.

Intrapreneurs are innovative change agents inside an existing corporation -- insider entrepreneurs. This course prepares students to become and/or identify effective intrapreneurs within their own business environment. Topics include the history of intrapreneurial success inside technology-based corporations and the fundamentals of recognizing opportunity and launching a new, promising enterprise within an existing business. Students also learn to recognize and effectively manage intrapreneurial risk, including the safety readiness of technology for the market place and the corporate "immune response" to new ideas and inside innovators. Case studies of real-world intrapreneurial success and failure provide a framework for group discussion and student exercises. Live participation in a weekly 1.5 hour online forum is required. The online forum is typically held on Sunday from 3:00-4:30pm CDT.

Prerequisites: ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]

ASEM 619. Capstone Project - Part 1. 3 Hours.

Bringing to bear the competencies acquired through the program, students develop a proposal, outline, schedule and rough draft of a comprehensive, advanced safety engineering and management plan for their business unit/specialty area that is consistent with the ANSI/AIHA Z10-2005, Occupational Health and Safety Management Systems standard. Judicious selection of the Capstone topic and of projects throughout the ASEM curriculum allows students to build on and use earlier course products to support their Capstone report. Live participation in a quarterly 1.25 hour online forum is required. Must be taken during the penultimate or final semester.

Prerequisites: (ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]) and (ASEM 611 [Min Grade: C] or EGR 611 [Min Grade: C]) and (ASEM 612 [Min Grade: C] and ASEM 613 [Min Grade: C] and ASEM 614 [Min Grade: C] and ASEM 615 [Min Grade: C] and ASEM 616 [Min Grade: C] and ASEM 617 [Min Grade: C] and ASEM 618 [Min Grade: C]) or (EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C] and EGR 618 [Min Grade: C])(Can be taken Concurrently)

ASEM 620. Capstone Project - Part 2. 3 Hours.

Students complete the development of their comprehensive, advanced safety engineering and management (ASEM) plan, including background information of the project, an ASEM plan (management and employee participation, planning, implementation and operation, evaluation and corrective action and management review), and rollout strategy. Students must submit completed report with detailed attachments, and orally present project highlights to the class in a live online classroom setting. Live participation in a quarterly 1.25 hour online forum is required.

Prerequisites: (ASEM 610 [Min Grade: C] or EGR 610 [Min Grade: C]) and (ASEM 611 [Min Grade: C] or EGR 611 [Min Grade: C]) and (ASEM 612 [Min Grade: C] and ASEM 613 [Min Grade: C] and ASEM 614 [Min Grade: C] and ASEM 615 [Min Grade: C] and ASEM 616 [Min Grade: C])(Can be taken Concurrently) and ASEM 617 [Min Grade: C](Can be taken Concurrently) and ASEM 618 [Min Grade: C] and ASEM 619 [Min Grade: C] or (EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C] and EGR 618 [Min Grade: C] (Can be taken Concurrently) and EGR 619 [Min Grade: C])(Can be taken Concurrently)

AST-Astronomy Courses**Advising Courses****Alabama System Cooperative Exc Courses**

ACX 520. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 521. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 522. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 540. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 541. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 542. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 620. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 621. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 622. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 640. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 641. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 642. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 720. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 721. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 722. Co-op Exch: University of Alabama. 1-6 Hour.

ACX 740. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 741. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

ACX 742. Co-op Exch: University of Alabama in Huntsville. 1-6 Hour.

Anthropology Courses**BMD-Biomedical Sciences Courses****BME-Biomedical Engineering Courses****BME 508. Biofluids. 3 Hours.**

Application of fluid mechanics in blood flow in the circulatory system; cardiovascular fluid mechanics, wall shear stress and the development of atherosclerosis, viscoelastic behavior of the arteries, Non-Newtonian character of blood.

BME 517. Engineering Analysis. 3 Hours.

Solutions to engineering problems involving ordinary and partial differential equations; Laplace transform, power series, Bessel functions, Legendre polynomials, Fourier series, Fourier integral and transform, Sturm-Liouville and separation of variables.

BME 520. Implant-Tissue Interactions. 3 Hours.

An overview of implant biocompatibility including tissue histology, histopathology of implant response and the regulatory process for medical devices.

BME 523. Living Systems Analysis. 3 Hours.

Basic concepts and techniques of measurement processing and analysis of data from living systems. Statistics, analysis of variance, regression analysis. Labs include blood flow data acquisition and analysis, implant biocorrosion testing, evaluation and analysis of cell proliferation and apoptosis.

BME 535. Tissue Engineering. 3 Hours.

Principles underlying strategies for regenerative medicine such as stem cell based therapy, scaffold design, proteins or genes delivery, roles of extracellular matrix, cell-materials interactions, angiogenesis, tissue transplantation, mechanical stimulus and nanotechnology.

BME 542. Principles of Medical Imaging. 3 Hours.

Types of radiation used in medical imaging, physics of interaction of ionizing radiation with matter, bremsstrahlung, attenuation coefficients, Compton scatter, nuclear disintegration of radionuclides, generation of medical radionuclides.

BME 543. Medical Image Processing. 3 Hours.

A lab-based introduction to processing, analysis and display techniques for medical imaging.

BME 545. Biomedical Optics. 3 Hours.

Fundamentals of light-matter interactions. Principles of biomedical optical imaging techniques including light spectroscopy, light microscopy, confocal microscopy, multi-photon microscopy, optical coherence tomography, and photoacoustic tomography.

BME 550. Computational Neuroscience. 3 Hours.

This course examines the computational principles used by the nervous system. Topics include: biophysics of axon and synapse, sensory coding (with an emphasis on vision and audition), planning and decision-making, and synthesis of motor responses. There will be an emphasis on a systems approach throughout. Homework includes simulations.

BME 561. Bioelectric Phenomena. 3 Hours.

Quantitative methods in the electrophysiology of neural, cardiac and skeletal muscle systems.

BME 562. Cardiac Electrophysiology. 3 Hours.

Semi-quantitative methods in cardiac electrophysiology. Analysis of the electrocardiogram (ECG), cellular dynamics, propagation in the heart including spiral waves, and the effect of electric fields on the heart.

BME 571. Continuum Mechanics of Solids. 3 Hours.

Matrix and tensor mathematics, fundamentals of stress, momentum principles, Cauchy and Piola-Kirchoff stress tensors, static equilibrium, invariance, measures of strain, Lagrangian and Eulerian formulations, Green and Almansi strain, deformation gradient tensor, infinitesimal strain, constitutive equations, finite strain elasticity, strain energy methods, 2-D Elasticity, Airy Method, viscoelasticity, mechanical behavior of polymers.

BME 580. Biomolecular Modelling. 3 Hours.

Computational methods to understand molecular mechanisms of normal function and disease related biological phenomena. Fundamentals of structural biology: genetic sequence to protein structure and function, nucleic acid membrane structure and function. Major techniques and their principles and algorithms for biomolecular modeling including molecular dynamics. Monte Carlo simulations, and electrostatics. Laboratories and projects will provide students hands-on experience in using different software packages such as VMD, GROMACS, and APBS.

BME 590. Special Topic in BME. 3 Hours.

Special topics in biomedical areas.

BME 598. Biomedical Product Development. 3 Hours.

Design and development issues of the medical product industry. Consideration of the impact of legal, regulatory and marketing issues, business ethics and economics will be addressed.

BME 601. Seminar in Biomedical Engineering. 1 Hour.

Current topics in biomedical engineering technology and applications.

BME 623. Wound Healing. 3 Hours.

Study of principles of healing, methods to enhance, and clinical applications.

BME 664. Neural Computation. 3 Hours.

This course examines the principal theoretical underpinnings of computation in neural networks. Emphasis will be placed on understanding the relationship between the different approaches: dynamical systems, statistical mechanics, logic, Kalman filters, and likelihood/Bayesian estimation.

BME 665. Computational Vision. 3 Hours.

This course approaches the study of biological and artificial vision from a theoretical perspective. We begin with a comparative survey of visual systems, and will examine vision algorithms and architectures.

BME 670. Quantitative Physiology. 3 Hours.

Study of physiological problems using advanced mathematical techniques. Topics covered include: mechanics, fluid dynamics, transport, electrophysiology of cell membranes, and control systems.

Prerequisites: BME 517 [Min Grade: C] or ME 661 [Min Grade: C] or ME 567 [Min Grade: C] or ME 761 [Min Grade: C]

BME 676. Fracture Mechanics. 3 Hours.

This course is geared for graduate students in a mechanics curriculum with an interest in advanced techniques and concepts in fracture mechanics. The course covers linear elastic fracture mechanics, including fatigue crack growth, and nonlinear elastic fracture mechanics. Experimental and computational methods are also introduced.

BME 690. Special Topics in (Area). 1-6 Hour.**BME 691. Individual Study in (Area). 1-6 Hour.****BME 693. Internship in Biomedical Engineering. 1-6 Hour.****BME 697. Journal Club in (Area). 1-3 Hour.**

Journal Club in Medical Imaging.

BME 698. Non-Thesis Research. 1-12 Hour.**BME 699. Master's Degree Thesis Research. 1-12 Hour.**

Prerequisites: GAC M

BME 701. Seminar in Biomedical Engineering. 1 Hour.

Current topics in biomedical engineering technology and applications.

BME 723. Wound Healing. 3 Hours.

Study of principles of healing, methods to enhance, and clinical applications.

BME 764. Neural Computation. 3 Hours.

This course examines the principal theoretical underpinnings of computation in neural networks. Emphasis will be placed on understanding the relationship between the different approaches: dynamical systems, statistical mechanics, logic, Kalman filters, and likelihood/Bayesian estimation.

BME 765. Computational Vision. 3 Hours.

This course approaches the study of biological and artificial vision from a theoretical perspective. We begin with a comparative survey of visual systems, and will examine vision algorithms and architectures.

BME 770. Quantitative Physiology. 3 Hours.

Study of physiological problems using advanced mathematical techniques. Topics covered include: mechanics, fluid dynamics, transport, electrophysiology of cell membranes, and control systems.

Prerequisites: BME 517 [Min Grade: C] or ME 661 [Min Grade: C] or ME 567 [Min Grade: C] or ME 761 [Min Grade: C]

BME 776. Fracture Mechanics. 3 Hours.

This course is geared for graduate students in a mechanics curriculum with an interest in advanced techniques and concepts in fracture mechanics. The course covers linear elastic fracture mechanics, including fatigue crack growth, and nonlinear elastic fracture mechanics. Experimental and computational methods are also introduced.

BME 790. Special Topics in (Area). 1-6 Hour.**BME 791. Individual Study in (Area). 1-6 Hour.****BME 793. Internship in Biomedical Engineering. 1-6 Hour.****BME 797. Journal Club in Medical Imaging. 1-3 Hour.**

Journal Club in (Area).

BME 798. Non-Dissertation Research. 1-12 Hour.**BME 799. Dissertation Research. 1-12 Hour.**

Prerequisites: GAC D

BMG-Biochem Molec Genetics Courses**BMG 698. Master s Level Non-Thesis Research. 3-9 Hours.**

Non Thesis research credit.

BMG 699. Thesis Research. 1-12 Hour.

Thesis Research . Must be admitted to master level candidacy and have a 3 members approved committee. Must take at least 6 hours of 699 to graduate with MS.

Prerequisites: GAC M

BMG 703. Protein NMR Laboratory Course. 3 Hours.

Principal focus of this course will be on introducing the student to the practical aspects of protein structural determination. This includes basics of operating a high field NMR spectrometer (including field-frequency lock and shimming), introduction to 2D and 3D NMR data collection on peptides and labeled proteins, assignment of NMR peaks, determination of structural constraints (distances and angles), and finally 3D structure.

BMG 706. RNA Bio:Metabolism & Action. 3 Hours.

The role of RNA as an intermediate in gene expression has been clear for many years; however, only recently has the wide array of cellular functions for this macromolecule become clear. This course will discuss 4 key topics in RNA biology: synthesis, decay, catalytic activity and regulatory activity. The format will be 1/3 lecture and 2/3 student presentations. Primary literature applicable to these aspects of RNA biology will be the basis for discussion. The goal of this course is to equip students to understand and appreciate the role that RNA plays in diverse, important cell functions.

BMG 726. Biochemistry and Molecular Genetics Seminar. 1 Hour.

Seminars in various topics in Biochemistry and Molecular Genetics.

BMG 732. Mechanisms of Enzyme Catalysis. 3 Hours.**BMG 733. Fermentation Technology. 3 Hours.****BMG 734. Protein Structure. 3 Hours.**

Emphasis on structural results derived from X-ray crystallographic analyses.

Prerequisites: CMB 713 [Min Grade: B] and CMB 720 [Min Grade: B]

BMG 741. Advanced Molecular Genetics. 3 Hours.

Mechanisms of gene regulation and rearrangement in bacteria, yeast, and higher eukaryotes.

Prerequisites: CMB 713 [Min Grade: B] and CMB 720 [Min Grade: B]

BMG 742. Biophysical Aspects of Molecular Structure and Function. 3 Hours.

Major modern biophysical methods used in the elucidation of the structure-function relationship of biologically important macromolecules.

Prerequisites: CMB 713 [Min Grade: B] and CMB 720 [Min Grade: B]

BMG 744. Protein Mass Spectrometry. 3 Hours.

Protein Spectrometry.

BMG 746. Transcriptional Factor. 3 Hours.**BMG 747. Connective Tissue Biochemistry. 3 Hours.****BMG 751. Advanced Virology. 3 Hours.**

Advanced studies of selected aspects of virology.

Prerequisites: CMB 730 [Min Grade: B]

BMG 753. Intro Macromol Crystallography. 3 Hours.

Theoretical and experimental aspects of protein crystallography.

Applications of X-ray diffraction techniques to studying three-dimensional structures of proteins. 999999.

Prerequisites: CMB 713 [Min Grade: B] and CMB 720 [Min Grade: B]

BMG 757. Physical Biochemistry. 3 Hours.

Physical methods for investigating structures of biological molecules.

Need background in calculus and physical chemistry.

BMG 760. Nuclear Magnetic Resonance. 3 Hours.

Nuclear Magnetic Resonance.

BMG 761. Advanced Eukariotic Molecular Biology. 3 Hours.

Advances Eukaryotic Molecular Biology.

BMG 762. Human Biochemistry and Genetics. 2 Hours.

General mammalian biochemistry for medical students and graduate students only.

BMG 769. Graduate Student Research Mtg. 1 Hour.

Monthly meeting of all BMG& BSB graduate students. Second year students and beyond will present their lab research and data. All current BMG& BSB students are required to present and attend monthly meetings. Attendance will be monitored. Grades will be awarded according to presentation and attendance. Course taught fall and spring semesters.

BMG 770. Journal Club in Metabolism. 1 Hour.

This course will be a literature review course that will cover current and pertinent recent papers concerning metabolic pathways, regulation of metabolism, and the impact of various metabolites on gene expression, cell growth, and differentiation in health and disease. Participation and presentation by each student is required.

BMG 771. Dental Biochemistry. 9 Hours.

Survey of human biochemistry, emphasis on areas of interest to dentists. For dental students only. Prerequisite: Permission of instructor.

BMG 772. Jnl Clb Prot/Mass Spectro. 1 Hour.

This course will be a weekly journal club in the area of proteomics and mass spectrometry. Each week, leading papers in the field will be reviewed by the students in the class. Emphasis will be placed on papers, which focus on the application of these cutting edge technologies to specific biological systems and pathways. Over the course of the semester, a wide range of proteomic applications of mass spectrometry will be covered from the papers reviewed including quantification of proteins, post-translational modification, biomarker discovery, sample preparation, data analysis, and proteomic experimental design.

BMG 773. Journal Club in Stem Cell Biology. 1 Hour.

Discussion of Stem cell Biology.

BMG 774. Journal Club Cell Signaling. 1 Hour.

The cell signaling journal club will review induction and regulation of cell signalling. Topics will include phosphorylation (tyrosine, serine, and threonine residues), signal transduction and cell stimulation by hormones, cytokines, growth factors and oxidants.

BMG 775. Special Topics in Biochemistry. 2 Hours.

Topics in Biochemistry and Molecular Genetics not covered in lecture courses.

BMG 776. Special Topics in Biochemistry. 1-5 Hour.

Special Topics in Biochemistry and Molecular Genetics not covered in lecture courses.

BMG 777. Special Topics in Biochemistry. 1-5 Hour.

Special Topics in Biochemistry and Molecular Genetics not covered in lecture courses.

BMG 778. Special Topics in Biochemistry. 1-5 Hour.

Special Topics in Biochemistry and Molecular Genetics not covered in lectures.

BMG 780. Special Topics in Biochemistry. 1-5 Hour.

Special Topics in Biochemistry and Molecular Genetics not covered in lectures.

BMG 781. Advanced Special Topics. 1-5 Hour.

Advanced Special Topics not covered in lecture courses.

BMG 782. Advanced Special Topics. 1-5 Hour.

Special Topics in Biochemistry and Molecular Genetics not covered in lectures.

BMG 784. Advanced Special Topics. 1-5 Hour.

Advanced Special Topics in Biochemistry and Molecular Genetics not covered in lectures.

BMG 785. Advanced Special Topics. 1-5 Hour.

Advanced Special Topics in Biochemistry and Molecular Genetics which are not covered in lectures.

BMG 786. Journal Club in Transcription. 1 Hour.**BMG 790. Journal Club in Developmental Biology. 1 Hour.****BMG 791. Journal Club in Gene Therapy. 1 Hour.**

Journal club in Gene Therapy. Seminar.

BMG 795. Journal Club in Molecular Biology. 1 Hour.

Journal Club.

BMG 796. Journal Club in Advanced Eukaryotic Biology. 1 Hour.

Journal Club.

BMG 798. Doctoral Level Non-Dissertation Research. 1-14 Hour.

Non Dissertation research credit.

BMG 799. Doctoral Level Dissertation Research. 1-14 Hour.

Prerequisites: GAC D

BPY-Biophysical Sciences Courses**BPY 598. Master s Level Non-Thesis Research. 1-12 Hour.****BPY 599. Master s Level Thesis Research. 1-12 Hour.****BPY 698. Master s Level Non-Thesis Research. 1-10 Hour.****BPY 701. Journal Club in Biophysical Sciences. 1 Hour.****BPY 717. Principles of Scientific Integrity. 1 Hour.****BPY 721. Biophysical Chemistry Laboratory. 2-6 Hours.****BPY 722. Biophysical Chemistry Laboratory. 2-6 Hours.****BPY 723. Biophysical Chemistry Laboratory. 2-6 Hours.****BPY 754. Biochemical Kinetics. 3 Hours.****BPY 775. Biochemical Applications of Fluorescence Spectrosc. 3 Hours.****BPY 793. Directed Studies in Biophysical Sciences. 1-6 Hour.****BPY 798. Doctoral Level Non-Dissertation Research. 1-12 Hour.****BST-Biostatistics Courses****BST 603. Introductory Biostatistics for Graduate Biomedical Sciences. 3 Hours.**

This course will utilize current statistical techniques to assess and analyze health science related data.

BST 607. Environmental Sampling and Exposure Assessment. 3 Hours.

Application of statistical techniques including use of lognormal distribution for environmental and occupational health exposure assessment problems. Spatial and temporal correlations are discussed and appropriate analysis techniques are described for these situations using statistical software packages.

BST 608. Statistical Modeling in Clinical and Epi Studies. 3 Hours.

Provide an understanding of modeling approaches to address the challenges of "real Life" data sets in the framework of linear models as they relate to clinical and epidemiological studies.

Prerequisites: BST 602 [Min Grade: C] and BST 612 [Min Grade: C]

BST 611. Intermediate Statistical Analysis I. 3 Hours.

Students will gain a thorough understanding of basic analysis methods, elementary concepts, statistical models and applications of probability, commonly used sampling distributions, parametric and non-parametric one and two sample tests, confidence intervals, applications of analysis of two-way contingency table data, simple linear regression, and simple analysis of variance. Students are taught to conduct the relevant analysis using current software such as the Statistical Analysis System (SAS).

BST 612. Intermediate Statistical Analysis II. 3 Hours.

This course will introduce students to the basic principles of tools of simple and multiple regression. A major goal is to establish a firm foundation in the discipline upon which the applications of statistical and epidemiologic inference will be built. If prerequisite is not met, permission of instructor is required.

Prerequisites: BST 611 [Min Grade: C]

BST 613. Intermediate Statis Analy III. 3 Hours.

This course will introduce students to additional general concepts in biostatistics beyond an introductory level to include study design, power and sample size estimation, mixed-models, survival analysis, survey design and interpretation of research results.

Prerequisites: BST 612 [Min Grade: C]

BST 619. Data Collection and Management. 3 Hours.

Basic concepts of study design, forms design, quality control, data entry, data management and data analysis. Hands-on experience with data entry systems, e.g., DBASE, and data analysis software, e.g., PC-SAS. Exposure to other software packages as time permits. Previous computer experience or workshop on microcomputers highly recommended. NOTE: If space permits, non-degree graduate students will be permitted to enroll. All students registered for the course must attend 1st class to remain enrolled.

Prerequisites: BST 600 [Min Grade: C] or BST 611 [Min Grade: C] or BST 621 [Min Grade: C]

BST 620. Applied Matrix Analysis. 3 Hours.

Vector and matrix definitions and fundamental concepts; matrix factorization and application. Eigen-values and eigen-vectors, functions of matrices, singular and ill-conditioned problems.

Prerequisites: BST 622 [Min Grade: C]

BST 621. Statistical Methods I. 3 Hours.

Mathematically rigorous coverage of applications of statistical techniques designed for Biostatistics majors and others with sufficient mathematical background. Statistical models and applications of probability; commonly used sampling distributions; parametric and nonparametric one and two sample tests and confidence intervals; analysis of two-way contingency table data; simple linear regression; simple analysis of variance designs with equal or proportional subclass members; use of contrasts and multiple comparisons procedures; introduction to survival analysis; multivariate methods. Interested students must have a year of calculus sequence before enrolling in BST 621.

BST 622. Statistical Methods II. 3 Hours.

Mathematically rigorous coverage of applications of statistical techniques designed for Biostatistics majors and others with sufficient mathematical background. Statistical models and applications of probability; commonly used sampling distributions; parametric and nonparametric one and two sample tests and confidence intervals; analysis of contingency tables; simple linear regression; simple analysis of variance designs with equal or proportional subclass members; use of contrasts and multiple comparisons procedures; introduction to survival analysis; multivariate methods.

Prerequisites: BST 621 [Min Grade: C]

BST 623. General Linear Models. 3 Hours.

Simple and multiple regression using matrix approach; weighted and non-linear regression; variable selection methods; modeling techniques; regression diagnostics and model validation; systems of linear equations; factorial designs; blocking; an introduction to repeated measures designs; Coding schemes.

Prerequisites: BST 622 [Min Grade: C]

BST 624. Experimental Design. 3 Hours.

Intermediate experimental design and analysis of variance models using matrix approach. Factorial and nested (hierarchical) designs; blocking; repeated measures designs; Latin squares; incomplete block designs; fractional factorials; confounding. Students should have had matrix algebra as a prerequisite.

Prerequisites: BST 623 [Min Grade: C]

BST 625. Design/Conduct Clinical Trials. 3 Hours.

Concepts of clinical trials; purpose, design, implementation and evaluation. Examples and controversies presented.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] or BST 621 [Min Grade: C] and BST 622 [Min Grade: C]

BST 626. Data Management and Reporting with SAS. 3 Hours.

A hands-on exposure to data management and report generation with one of the most popular statistical software packages. Concurrent registration in BST 626L is required. Note: Non-degree graduate students will be allowed to register if space permits.

BST 626L. Data Management and Reporting with SAS Laboratory. 0 Hours.

A hands-on exposure to data management and report generation with one of the most popular statistical software packages.

BST 631. Statistical Theory I. 4 Hours.

Fundamentals of probability; independence; distribution and density functions; random variables; moments and moment generating functions; discrete and continuous distributions; exponential families, marginal and conditional distributions; transformation and change of variables; convergence concepts, sampling distributions. Point and interval estimation; hypothesis and significance testing; sufficiency and completeness; ancillary statistics; maximum likelihood and moment estimators; asymptotic properties of estimators and tests; introduction to Bayesian inference. Prerequisite: Advanced Calculus.

BST 632. Statistical Theory II. 4 Hours.

Fundamentals of probability; independence; distribution and density functions; random variables; moments and moment generating functions; discrete and continuous distributions; exponential families, marginal and conditional distributions; transformation and change of variables; convergence concepts, sampling distributions. Point interval estimation; hypothesis and significance testing; sufficiency and completeness; ancillary statistics; maximum likelihood and moment estimators; asymptotic properties of estimators and tests; introduction to Bayesian inference.

Prerequisites: BST 631 [Min Grade: C]

BST 640. Nonparametric Methods. 3 Hours.

Properties of statistical tests; order statistics and theory of extremes; median tests; goodness of fit; tests based on ranks; location and scale parameter estimation; confidence intervals; association analysis; power and efficiency.

Prerequisites: BST 622 [Min Grade: C] and BST 632 [Min Grade: C]

BST 655. Categorical Data Analysis. 3 Hours.

Logistic regression models; regression diagnostics; proportional odds; ordinal and polytomous logistic regression; analyses for multi-way tables; Mantel-Haenszel test; measures of association and of agreement; loglinear and logit models; ordinal discrete data; matched pairs; repeated categorical data. BST 612 or equivalent recommended as a prerequisite.

Prerequisites: BST 622 [Min Grade: C]

BST 660. Applied Multivariate Analysis. 3 Hours.

Analysis and interpretation of multivariate general linear models including multivariate regression, multivariate analysis of variance/covariance, discriminant analysis, multivariate analysis of repeated measures, canonical correlation, and longitudinal data analysis for general and generalized linear models. Extensive use of SAS, SPSS, and other statistical software.

Prerequisites: BST 623 [Min Grade: C]

BST 661. Structural Equation Modelling. 3 Hours.

Basic principles of measurements; factor analysis and latent variable models; multivariate predictive models including mediation mechanisms and moderators effects; path analysis; intergrative mutivariate covariance models, methods of llongitudinal analysis.

Prerequisites: BST 623 [Min Grade: C]

BST 665. Survival Analysis. 3 Hours.

Design and analysis of clinical trials; sample size computation; properties of survival distributions; estimation and hypothesis testing for survival parameters; Kaplan-Meier estimation; exponential tests; Cox proprtional hazards regression models, parametric survival models.

Prerequisites: BST 622 [Min Grade: C]

BST 670. Sampling Methods. 3 Hours.

Simple random, stratified, cluster, ratio regression and systematic sampling; sampling with equal or unequal probabilities of selection; optimization; properties of estimators; non-sampling errors; sampling schemes used in population research; methods of implementation and analyses associated with various schemes.

Prerequisites: BST 631 [Min Grade: C]

BST 671. Meta-Analysis. 3 Hours.

Statistical methods and inference through meta analysis.

Prerequisites: BST 623 and BST 632

BST 675. Introduction to Statistical Genetics. 3 Hours.

This class will introduce students to population genetics, genetic epidemiology, microarray and proteomics analysis, Mendelian laws, inheritance, heritability, test cross linkage analysis, QTL analysis, human linkage and human association methods for discrete and quantitative traits.

Prerequisites: BST 611 [Min Grade: C] or BST 621 [Min Grade: C]

BST 676. Genomic Data Analysis. 3 Hours.

Algorithms and methods that underlie the analysis of high dimensional biological data, as well as issues in the design and implementation of such studies. High dimensional biology includes microarrays, proteomics, genomic, protein structure, biochemical system theory and phylogenetic methods. NOTE: Some knowledge of statistics (MTH 180 or BST 621) also some bio-informatics/high dimensional biology training (CS 640, MIC 753, or BST 675 is required. Interested students are urged to contact the instructors with concerns regarding assumed knowledge.

Prerequisites: BST 611 [Min Grade: C] or BST 621 [Min Grade: C]

BST 680. Statistical Computing with R. 2 Hours.

This course is mainly focused on R and how to use R to conduct basic statistical computing. The course contains three themes: R programming, introduction to high performance computing, and basics of statistical computing.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 626 [Min Grade: C] and BST 631 [Min Grade: C] and BST 632 [Min Grade: C]

BST 690. Biostatistical Consulting and Applied Problems. 3 Hours.

Students will work individually to address, analyze and present the results of an applied problem or grant design each week. The presentation of approaches, solutions and designs will be conducted in a round table format. Students will be evaluated on the quality of solution and by their presentation and class participation.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C]

BST 691. Pre-Doctoral Seminar Series. 1 Hour.

BST seminar series.

BST 695. Special Topics. 1-3 Hour.

Special topics in Biostatistics not covered in regular 600 level courses, but suited for Masters students in Biostatistics and doctoral students in other related disciplines.

Prerequisites: BST 631 [Min Grade: C] and BST 632 [Min Grade: C]

BST 697. Internship in Biostatistics. 3 Hours.

Field Experience under joint direction of appropriate public health faculty member and qualified specialists working in selected aspects of public health.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

BST 698. Non Thesis Research. 1-12 Hour.

Independent non-thesis research with guidance of appropriate faculty.

BST 699. Thesis Research. 1-12 Hour.

Thesis Research under the direction of research committee. At least 6 graduate credits needed for graduation.

Prerequisites: GAC M

BST 723. Theory of Linear Models. 3 Hours.

Multivariate normal distributions and quadratic forms; least square estimation; nested models; weighted least squares, testing contrasts; multiple comparison; polynomial regression; maximum likelihood theory of log linear models will be studied.

Prerequisites: BST 632 [Min Grade: C]

BST 725. Advances Clinical Trials. 3 Hours.

This course will provide students with the tools to develop a basic understanding of the fundamental statistical principles involved in the design and conduct of clinical trials.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] or BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 625 [Min Grade: C]

BST 726. Adv Clin Trials II. 3 Hours.

Students will develop a more thorough understanding of the basic methodology behind important statistical concepts used in the design and analysis of large randomized clinical trials.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 625 [Min Grade: C] and BST 631 [Min Grade: C] and BST 632 [Min Grade: C] and BST 725 [Min Grade: C]

BST 735. Advanced Inference. 4 Hours.

Families of models; likelihood; sufficiency; significance tests; similar regions; point and interval estimation; invariant tests; asymptotic theory and large sample inference; LR, score and Wald tests; robust procedures will be studied.

Prerequisites: BST 632 [Min Grade: C] and BST 631 [Min Grade: C]

BST 740. Bayesian Analysis. 3 Hours.

To introduce the student to the basic principles and tools of Bayesian Statistics and most importantly to Bayesian data analysis techniques. A major goal is to establish a firm foundation in the discipline upon which the applications of statistical and epidemiologic inference will be built.

Prerequisites: BST 632 [Min Grade: C]

BST 741. Advanced Bayesian Analysis II. 3 Hours.

This course is intended to illustrate advanced Bayesian modeling and computation for variety of models and problems.

Prerequisites: BST 622 [Min Grade: C] and BST 632 [Min Grade: C]

BST 750. Stochastic Modeling. 3 Hours.

Poisson processes; random walks; simple diffusion and branching processes; recurrent events; Markov chains in discrete and continuous time; birth and death process; queuing systems; applications to survival and other biomedical models will be studied.

Prerequisites: BST 632 [Min Grade: C]

BST 760. Generalized Linear and Mixed Models. 3 Hours.

Generalized linear models; mixed models; and generalized estimating equations.

Prerequisites: BST 723 [Min Grade: C]

BST 765. Advanced Computational Methods. 3 Hours.

Numerical algorithms useful in biostatistics including likelihood maximization using the Newton-Raphson method, EM algorithm, numerical integration using quadratic and Monte-Carlo methods, interpolation using splines, random variate generation methods, data augmentation algorithm, and MCMC and Metropolis-Hastings algorithm; randomization tests; resampling plans including bootstrap and jackknife will be studied.

Prerequisites: BST 632 [Min Grade: C]

BST 775. Statistical Methods for Genetic Analysis I. 3 Hours.

This course will provide a statistical basis for describing variation in qualitative (disease) and quantitative traits. This will include decomposition of trait variation into components representing genes, environment and gene-environment interaction. Resemblance between relative and heritability will be described. Important topics of discussion will include oligogenic and polygenic traits, complex segregations analysis, methods of mapping and characterizing simple and complex trait loci. NOTE: It is assumed that students are comfortable with regression theory, covariance, correlation, and likelihood theory. Interested students are urged to contact the instructors with concerns regarding assumed knowledge.

Prerequisites: BST 623 [Min Grade: C] and BST 632 [Min Grade: C] and BST 675 [Min Grade: C]

BST 776. Statistical Methods for Genetic Analysis II. 3 Hours.

This course builds on the knowledge gained in BST 775 with rigorous mathematical & statistical treatment of methods for localizing genes and environmental effects involved in the etiology of complex traits using case-control and pedigree data. NOTE: Knowledge of SAS and programming languages such as C++, and basic knowledge of multivariate methods and Markov chain theory is highly recommended.

Prerequisites: BST 775 [Min Grade: C]

BST 793. Post-doc Seminar Series. 3 Hours.

: BST seminar series.

BST 795. Advanced Special Topics. 1-3 Hour.

This course is designed to cover advanced special topics in Biostatistics that are not covered in regular 700 level courses, but suited for doctoral students in Biostatistics.

Prerequisites: BST 622 [Min Grade: C] and BST 632 [Min Grade: C]

BST 798. Non-Dissertation Research. 1-12 Hour.

Non-dissertation research with the guidance of appropriate faculty. Research conducted before admission to candidacy for the doctoral degree,.

BST 799. Dissertation Research. 1-12 Hour.

Doctoral Level Dissertation Research under the direction of the dissertation research committee.

Prerequisites: GAC D

BT-Biotechnology Courses**BT 500. Principles of Biotechnology - Nucleic Acid Technology. 3 Hours.**

Theories and knowledge required for the development and commercialization of nucleic acid-based technology for the biotechnology industry including genes, cloning, detection, therapies, diagnostics, and analysis.

BT 550. Principles of Biotechnology & Amino Acid Technology. 3 Hours.

Theories and knowledge required for the development and commercialization of amino acid-based technology for the biotechnology industry including protein-based therapeutics, diagnostics, vaccines, and research reagents.

Prerequisites: BT 500 [Min Grade: C]

BT 600. Principles of Biotechnology & Systems Biology & Pharmacology. 3 Hours.

Theories and knowledge required for the understanding of the science and technology of systems biology and pharmacology.

Prerequisites: BT 550 [Min Grade: C]

BT 650. Applications in Biotechnology I. 1 Hour.

Lab provides the opportunity to set-up, perform, and interpret the results of various molecular assays. These include, but are not limited to, the following: nucleic acid isolation, enzymatic manipulation of nucleic acids, gel electrophoresis, amplification reactions and hybridization reactions. Most of the laboratory work will involve a eukaryotic system.

BT 651. Applications in Biotechnology II. 1 Hour.

A laboratory that prepares students for the biotechnology industry by teaching how recombinant DNA can be used to generate specific proteins in any protein expression system. Tec.

Prerequisites: BT 650 [Min Grade: C]

BT 652. Applications in Biotechnology III. 1 Hour.

Laboratory applications required for the research and development of nucleic acid and amino acid based technology for the biotechnology industry.

Prerequisites: BT 651 [Min Grade: C]

BT 670. Bench to Commercialization I. 3 Hours.

Focus on growth of a biotechnology company from inception through the early stages of development. Topics will include market assessment, business plan development, raising capital, and regulatory and quality systems requirements for drugs, biologics, medical devices or combination products.

BT 671. Bench to Commercialization II. 3 Hours.

Focus is on the issues and challenges effecting the life cycle of a biotechnology company and product as it progresses through the different stages of development including regulatory strategies, financing strategies, business development, and marketing strategies.

Prerequisites: BT 670 [Min Grade: C]

BT 672. Bench to Commercialization III. 3 Hours.

Focus is on the role of managers and leaders within biotechnology companies as they undergo constant change. The course will review effective communication strategies, problem solving tactics, leadership skills and development of methods to implement change. Students will focus on developing writing, verbal, and presentation skills through a series of projects.

Prerequisites: BT 671 [Min Grade: C]

BT 676. Innovative Technologies in Biotechnology. 1 Hour.

An overview of new and innovative technologies used in the discovery, development, and production of biotechnology products. This will include a series of guest speakers who have successfully discovered novel technologies and products and transitioned them into early-stage companies.

BT 695. Biotechnology Internship. 2-4 Hours.

Supervised basic research in areas including molecular biology, protein chemistry, drug discovery, cardiovascular diseases, neurodegenerative diseases and cancer. Students are trained in research planning and execution, problem-solving, team work, and data analysis and presentation.

Prerequisites: BT 671 [Min Grade: C]

BT 698. Non-Thesis Research. 1-6 Hour.

Non Thesis Research.

BUS-Business Courses**BY-Biology Courses****BY 501. Advanced Biology for Teachers I. 3 Hours.**

Basic genetic principles; recent research developments. Prerequisite: Permission of instructor.

BY 502. Botany for Teachers. 3 Hours.

Provides understanding of human structural and functional relationships essential in modern biology. Corequisite: BY 503.

BY 503. Advanced Biology for Teachers III. 1 Hour.

Laboratory supplementing lecture (BY 502) through use of human specimens, models, and demonstrations.

BY 504. Life Science for Middle School Teachers. 3 Hours.

Life Science for Middle School Teachers.

BY 507. Microbial Ecology. 3 Hours.

Microorganisms in nature; interactions with each other and with environment. Independent project required. Prerequisite: BY 271.

BY 511. Molecular Genetics. 3 Hours.

Prokaryotic and eukaryotic gene structure and function. Independent project required. Prerequisite: BY 271, BY 330 and CH 232.

BY 520. General Endocrinology. 3 Hours.

Roles of endocrine and neuroendocrine chemical messengers in the control of cellular and physiological processes. Term paper required. Prerequisite: BY 256 or permission of instructor.

BY 527. Histology. 4 Hours.

Microscopic anatomy of cells, tissues, and organs of animals; correlation of structure and function. Techniques and methodology. Lecture and laboratory. Completion of additional independent project required for graduate credit.

BY 527L. Histology Laboratory. 0 Hours.

Histology Lab required with BY 527 lecture.

BY 531. Advanced Recombinant DNA Technology. 3 Hours.

Manipulation of genes and their regulations, and techniques used in recombinant DNA technology. Independent project required. Prerequisites: BY 311, BY 330, CH 233 and CH 460 or 461.

BY 535. Natural History of Vertebrates. 4 Hours.

Adaptations of vertebrates for survival in particular environments. Survey and classification of local vertebrates. Two lectures, one laboratory or field trip per week. Independent project required.

BY 535L. Natural History of the Vertebrates Lab. 0 Hours.

Lab must be taken with BY 535 lecture.

BY 540. Biology of Aging. 3 Hours.

Current understanding of aging, measuring aging changes, theories of aging and aging changes in various human systems.

Prerequisites: BY 123 [Min Grade: C]

BY 552. Field Botany. 4 Hours.

Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lecture and field trips. Independent project required.

BY 552L. Field Botany Lab. 0 Hours.

Lab must be taken with BY 552 lecture.

BY 555. Principles of Scientific Investigation. 3 Hours.

Methods of scientific process, experimental design, data interpretation and presentation, and scientific writing.

BY 560. Advanced Invertebrate Zoology. 3 Hours.

Selected topics. Lecture and student projects. Prerequisite: BY 255.

BY 565. Limnology. 4 Hours.

Biology of freshwater and estuarine organisms. Lecture, laboratory, and field trips. Prerequisite: BY 124 and BY 470.

BY 565L. Limnology Lab. 0 Hours.

Lab must be taken with BY 565 lecture.

BY 567. Tropical Ecology. 3 Hours.

An overview of the major tropical ecotypes with emphasis on ecology of terrestrial, aquatic, and marine tropical organisms. Major portion of course taught at a tropical field station in the Caribbean. Lectures, laboratory, and field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

BY 568. Galapagos Ecology. 3 Hours.

The ecology of the Galapagos Islands, with an emphasis on terrestrial & marine organisms. Major portion conducted on the Galapagos Islands. Lecture & field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

BY 569. Rain Forest Ecology. 3 Hours.

Overview of physical and environmental factors that structure the rainforest, biodiversity of life, and interactions of its organisms. A survey of prominent biota will be conducted. Major portion of course taught in Costa Rica. Lectures and field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

BY 570. Ecology. 3 Hours.

Ecosystems and population biology. Lectures. Independent project required. Prerequisite: BY 255 or 256 or 260 and Graduate Standing.

BY 571. Ecology Lab. 1 Hour.

Preq is BY 570 or concurrent enrollment. Field trips. 1 hour.

Prerequisites: BY 570 [Min Grade: C](Can be taken Concurrently)

BY 573. Biochemical Adaptation to the Environment. 3 Hours.**BY 585. Northern Field Studies. 3 Hours.**

Ecology of northern coniferous forest and tundra ecosystems. Major portion of course taught on site in Alaska. Lecture and field trips. Graduate project/paper required. 3 hours. (Irregular offering).

BY 595. Special Topics in Biology I. 1-4 Hour.**BY 596. Special Topics in Biology II. 1-4 Hour.****BY 597. Investigative Techniques. 2 Hours.****BY 598. MR Lev Non-Thesis Research. 1-10 Hour.****BY 605. Microbial Physiology. 3 Hours.**

Microbial structure and function, growth, metabolism, and regulation of cellular activity. Independent project required. Prerequisites: BY 271 and 3 semester hours of organic chemistry.

BY 607. Microbiology Ecology. 3 Hours.

Microorganisms in nature; interactions with each other and with the environment. Independent project required.

BY 610. Comparative Animal Physiology. 3 Hours.

Special physical and chemical processes occurring at cell tissue, and organ levels. Independent projects required.

BY 611. Advanced Human Anatomy. 4 Hours.

This course is a detailed, advanced examination of human anatomy and histology. In a laboratory setting, students will achieve course objectives from dissecting a human cadaver, and observing prosected cadavers and casted models.

BY 615. Eco-Epid. of Arthropd Brn Dis. 4 Hours.

This course covers the ecology, epidemiology, & control of arthropods and the pathogens they transmit to humans and animals. Special emphasis will be placed on emerging and re-emerging pathogens such as: dengue, yellow fever, bartonella, Rift Valley fever, typhus, & Chagas disease. The laboratory will reinforce the lectures with hands-on identification of both arthropods and pathogens. Lecture and Lab. Independent Project required. 3 hours.

BY 615L. Ecology & EPI Arthrop Lab. 0 Hours.**BY 616. Cellular Physiology. 4 Hours.**

Structure and function of cells and their components at the molecular level. Laboratory experience using modern equipment and biochemical methods. Independent project required.

BY 619. Reproductive Physiology. 3 Hours.

Comparative reproductive physiology in animals with emphasis on mammals. Independent project required.

BY 626. Evolutionary Medicine. 3 Hours.

An evolutionary approach to issues relating to human health and disease.

BY 628. Instruct Bio Labs: Teaching Techniques. 3 Hours.

Student will assist in instruction of an introductory biology laboratory. Responsibilities will also include preparation of quizzes and practicals and designing and conducting an instructional laboratory exercise.

BY 629. Evolutionary Biology. 3 Hours.

This course introduces the history of evolutionary thought and modern evolutionary theory. Discussions cover (but are not limited to) the history of life, mechanisms of evolutionary change, sexual selection, adaptation, speciation, and molecular evolution. Students will also be introduced to historical and contemporary studies of evolution on a wide variety of topics and organisms. Regular meetings outside of lecture will involve discussions of classic and contemporary research papers in the field.

BY 632. Biological Information Resources. 3 Hours.

The National Center for Biological Information (NCBI) website is a treasure house of information and tools for researchers in all areas of modern Biology. The goal of this course is to provide guidance for students who wish to become familiar with the NCBI website through an online learning experience. They will learn many of the features available at this site and will gain experience using some of the tools. The course will be taught completely online and will consist of 1) Guidelines for navigating through NCBI, 2) Study guide questions for students to answer online, 3) NCBI tutorials with questions to be answered online, 4) Assignments with questions to be answered online, 5) Online exams. Graduate levels require a graduate project.

Prerequisites: BY 123 [Min Grade: C] or BY 124 [Min Grade: C]

BY 633. Advanced Molecular Genetics. 3 Hours.

Examination of the molecular genetics of eukaryotic organisms, including genomes, nucleosomes, chromosomes, transcription, splicing, transposition and signal transduction. The role of molecular biology in immune diversity and cell growth will also be studied.

BY 634. Functional Genomics and Systems Biology. 3 Hours.

Systems biology is an inter-disciplinary study underlying complex biological processes as integrated systems of many interacting components. This course will give students a foundation in understanding complex biological interactions at the molecular, network and genomic level. This course will cover state-of-the-art high throughput established and novel approaches used in genome sequencing, transcriptomics, proteomics and metabolomics to obtain, integrate and analyze complex data. The students will also get familiar with knowledge on experimental perturbation of genomes, gene regulatory networks, comparative genomics and evolution, basic bioinformatics. This course will be a combination of text based lectures and discussions of the current literature relevant to Functional Genomics and Systems Biology.

Prerequisite: BY210 minimum grade of C.

Prerequisites: BY 210 [Min Grade: C]

BY 637. Epigenetics. 3 Hours.

This course provides a survey of the field of epigenetics, introducing the student to the diverse areas of epigenetic research in a variety of eukaryotic systems. The course combines lectures with discussion of primary literature and research talks from invited faculty speakers working in epigenetics. In addition to providing an overview of the field of epigenetics, this course emphasizes working with primary scientific literature and the development of critical reading skills. Additional assignments are required for graduate credit.

BY 640. Immunology. 3 Hours.

Immune system and functions of host humoral and cellular immune responses. Mechanisms of antigen and antibody reactions and basic immunological methods. Term paper required.

BY 642. Experimental Phycology. 4 Hours.

Introduction to algae. Experimental approaches to productivity. Algae as model systems. Independent project required. Concurrent enrollment in BY 642 lab required.

BY 642L. Experimental Phycology Lab. 0 Hours.

Lab must be taken concurrently with BY 642 lecture.

BY 645. Neuroanatomy. 4 Hours.

This course will provide detailed lecture and laboratory experiences that describe the anatomy of the human brain, spinal cord, and peripheral nervous system. Students will culture rat hippocampal neurons and map the cerebral and cerebellar cortex on preserved human brains. Deep brain structures will be identified and their functional significance explored. Cranial nerves and major peripheral nerves will be described and identified through cadaveric dissections. Normal pathways will be contrasted with examples of abnormalities along with the resulting functional impairments. Graduate credit will be earned through the completion of additional term papers and/or projects.

BY 646. Techniques in Biological Research. 3 Hours.

Concepts and practical application of techniques pertinent to biological research.

BY 648. Psychoneuroimmunology. 3 Hours.

Explores communication between neuroendocrine and immune systems.

BY 651. Plant Biology. 3 Hours.

This course introduces the student to the basic concepts of plant biology including plant diversity, structure, physiology, metabolism, reproduction, genetics, molecular biology, evolution and ecology. It is targeted to Biology Majors and Biology Graduate Students. This class brings together knowledge and methodologies from a number of different disciplines to provide students with an intensive and comprehensive plant curriculum from the molecular to the organismal level.

BY 652. Field Botany for Teachers. 4 Hours.

Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lectures and field trips. Independent project required.

BY 652L. Field Botany Lab. 0 Hours.

Lab must be taken with BY 652 lecture.

BY 653. Mycology. 4 Hours.

ungi, including morphology, development, physiology, taxonomy, and phylogeny. Independent project required. Offered at irregular intervals.

BY 653L. Mycology Lab. 0 Hours.**BY 655. Biometry. 3 Hours.**

Statistical techniques used to analyze and interpret data, with emphasis on biological applications. Lecture and computer-based laboratory. 3 semester hours. Graduate standing and permission of instructor.

BY 662. Introductory Neurobiology. 3 Hours.

Introduction to biological basis of nervous system function. Comparative approach applying molecular, cellular, and systems' concepts to nervous system function is used to examine electrical and chemical signaling, neural circuitry, and cellular basis of behavior and neural development. Independent project required.

BY 665. Limnology. 4 Hours.

Introduction to ecology of inland waters and estuaries. Lectures and field trips.

BY 665L. Limnology Lab. 0 Hours.

Lab must be taken concurrently with BY 665 lecture.

BY 667. Population Ecology. 3 Hours.

This course covers the structure and dynamics of populations with an emphasis on understanding how reproduction, mortality, and dispersal interact to control fluctuations in population size and structure. Special emphasis will be placed on the use of models to address specific applications in conservation biology and natural resource management. Independent project/paper required. Preqs: BY 570 & graduate stranding or permission of instructor.

BY 669. Molecular Ecol & Phylogenetics. 3 Hours.

Course surveys processes and patterns of molecular evolution and methods of phylogenetic analysis of DNA sequences, amino acid sequences, and other molecular markers. Additionally, a project/paper will be required. Graduate level; 3 hours credit.

BY 671. Biochemical Adapt Environment. 3 Hours.

Examination of physiological and biochemical adaptations of organisms to physical environment.

BY 673. Biochemical Adaptation to the Environment. 3 Hours.**BY 674. Chemical Ecology. 3 Hours.**

Study of chemical interactions between organisms or between organisms and their environment. Topics include chemical signaling between organisms, sensing of the chemical environment, and chemical defenses against predators, pathogens, biofoulers, or competitors. Students will be introduced to these topics in a wide variety of terrestrial and aquatic habitats, with a special emphasis on marine organisms. Independent project/paper required. Preq: BY 350 or BY 470/570 & Graduate standing or permission of instructor.

BY 675. Comparative Developmental Biology. 3 Hours.

Mechanisms of development with emphasis on comparative biology, from gametogenesis through completion of embryogenesis.

BY 681. Seminar in Physiological Ecology. 1 Hour.

Current research.

BY 682. Seminar in Immunology. 1 Hour.

Current research.

BY 683. Seminar in Physiology. 1 Hour.

Current research.

BY 684. Seminar in Microbial Ecology. 1 Hour.

Current research.

BY 685. Seminar in Cell Biology. 1 Hour.

Current research.

BY 686. Seminar in Mammalian Development. 1 Hour.

Current research.

BY 687. Seminar in Endocrinology. 1 Hour.

Current research.

BY 688. Seminar in Algal Ecophysiology. 1 Hour.

Current research in specific areas.

BY 689. Seminar in Genetics. 1 Hour.

Current research.

BY 690. Seminar in Cellular Physiology. 1 Hour.

Current research in specific areas.

BY 691. Seminar in Botany. 1 Hour.

Current research developments.

BY 692. Seminar in Ecology. 1 Hour.

Current research.

BY 693. Seminar in Embryology. 1 Hour.

Current research.

BY 694. Seminar in Microbiology. 1 Hour.

Current research in microbial ecology and microbial physiology.

BY 695. Special Topics in Biology I. 1-4 Hour.**BY 696. Special Topics in Biology II. 1-4 Hour.****BY 697. Investigative Techniques. 1-2 Hour.**

Application of modern experimental techniques in solving research problems.

BY 698. Nonthesis Research. 1-12 Hour.**BY 699. Thesis Research. 1-10 Hour.**

Prerequisite: Admission to candidacy.

Prerequisites: GAC M

BY 732. Biological Information Resources. 3 Hours.

The National Center for Biological Information (NCBI) website is a treasure house of information and tools for researchers in all areas of modern Biology. The goal of this course is to provide guidance for students who wish to become familiar with the NCBI website through an online learning experience. They will learn many of the features available at this site and will gain experience using some of the tools. The course will be taught completely online and will consist of 1) Guidelines for navigating through NCBI, 2) Study guide questions for students to answer online, 3) NCBI tutorials with questions to be answered online, 4) Assignments with questions to be answered online, 5) Online exams. Graduate levels require a graduate project.

Prerequisites: BY 123 [Min Grade: C] or BY 124 [Min Grade: C]

BY 734. Functional Genomics and Systems Biology. 3 Hours.

Systems biology is an inter-disciplinary study underlying complex biological processes as integrated systems of many interacting components. This course will give students a foundation in understanding complex biological interactions at the molecular, network and genomic level. This course will cover state-of-the-art high throughput established and novel approaches used in genome sequencing, transcriptomics, proteomics and metabolomics to obtain, integrate and analyze complex data. The students will also get familiar with knowledge on experimental perturbation of genomes, gene regulatory networks, comparative genomics and evolution, basic bioinformatics. This course will be a combination of text based lectures and discussions of the current literature relevant to Functional Genomics and Systems Biology.

Prerequisite: BY210 minimum grade of C.

Prerequisites: BY 210 [Min Grade: C]

BY 737. Epigenetics. 3 Hours.

This course provides a survey of the field of epigenetics, introducing the student to the diverse areas of epigenetic research in a variety of eukaryotic systems. The course combines lectures with discussion of primary literature and research talks from invited faculty speakers working in epigenetics. In addition to providing an overview of the field of epigenetics, this course emphasizes working with primary scientific literature and the development of critical reading skills. Additional assignments are required for graduate credit.

BY 746. Tech in Biological Research I. 3 Hours.

Concepts and practical application of techniques pertinent to biological research.

BY 751. Plant Biology. 3 Hours.

This course introduces the student to the basic concepts of plant biology including plant diversity, structure, physiology, metabolism, reproduction, genetics, molecular biology, evolution and ecology. It is targeted to Biology Majors and Biology Graduate Students. This class brings together knowledge and methodologies from a number of different disciplines to provide students with an intensive and comprehensive plant curriculum from the molecular to the organismal level.

BY 755. Biometry. 3 Hours.

Statistical techniques used to analyze and interpret data, with emphasis on biological applications. Lecture and computer-based laboratory. 3 semester hours. Graduate standing and permission of instructor.

BY 763. Electron Microscopy. 4 Hours.

BY 763L. Electron Microscopy Lab. 0 Hours.

BY 767. Population Ecology. 3 Hours.

This course covers the structure and dynamics of populations with an emphasis on understanding how reproduction, mortality, and dispersal interact to control fluctuations in population size and structure. Special emphasis will be placed on the use of models to address specific applications in conservation biology and natural resource management. Independent project/paper required. Graduate standing or permission of instructor.

BY 769. Molecular Ecol & Phylogenetics. 3 Hours.**BY 773. Biochemical Adaptation to the Environment. 3 Hours.****BY 781. Seminar in Physiological Ecology. 1 Hour.**

Current research.

BY 782. Seminar in Immunology. 1 Hour.

Current research.

BY 783. Seminar in Physiology. 1 Hour.

Current research.

BY 784. Seminar in Microbial Ecology. 1 Hour.

Current research.

BY 785. Seminar in Cell Biology. 1 Hour.

Current research.

BY 786. Seminar in Mammalian Development. 1 Hour.

Current research.

BY 787. Seminar in Endocrinology. 1 Hour.

Current research.

BY 788. Sem in Algal Ecophysiology. 1 Hour.

Current research in specific areas.

BY 789. Seminar in Genetics. 1 Hour.

Current research.

BY 790. Sem in Cellular Physiology. 1 Hour.

Current research in specific areas.

BY 791. Seminar in Botany. 1 Hour.

Current research developments.

BY 792. Seminar in Ecology. 1 Hour.

Current research.

BY 793. Seminar in Embryology. 1 Hour.

Current research.

BY 794. Seminar in Microbiology. 1 Hour.

Current research in microbial ecology and microbial physiology.

BY 795. Special Topics in Biology I. 1-4 Hour.**BY 796. Special Topics in Biology II. 1-4 Hour.****BY 797. Investigative Techniques. 1-2 Hour.**

Application of modern experimental techniques in solving research problems.

BY 798. Nondissertation Research. 1-10 Hour.**BY 799. Dissertation Research. 1-10 Hour.**

Prerequisite: Admission to Candidacy.

Prerequisites: GAC D

Birmingham Area Consortium Courses

BCX 510. BACHE: Birmingham Southern. 1-6 Hour.

BCX 511. BACHE: Birmingham Southern. 1-6 Hour.

BCX 512. BACHE: Birmingham Southern. 1-6 Hour.

BCX 513. BACHE: Birmingham Southern. 1-6 Hour.

BCX 514. BACHE: Birmingham Southern. 1-6 Hour.

BCX 530. BACHE: Miles College. 1-6 Hour.

BCX 531. BACHE: Miles College. 1-6 Hour.

BCX 532. BACHE: Miles College. 1-6 Hour.

BCX 533. BACHE: Miles College. 1-6 Hour.

BCX 534. BACHE: Miles College. 1-6 Hour.

BCX 550. BACHE: Univ of Montevallo. 1-6 Hour.

BACHE: University of Montevallo.

BCX 551. BACHE: Univ of Montevallo. 3-6 Hours.

BACHE: University of Montevallo.

BCX 552. BACHE: Univ of Montevallo. 1-6 Hour.

BACHE: University of Montevallo.

BCX 553. BACHE: Univ of Montevallo. 1-6 Hour.

BACHE: University of Montevallo.

BCX 554. BACHE: Univ of Montevallo. 1-6 Hour.

BACHE: University of Montevallo.

BCX 570. BACHE: Samford Univ. 1-6 Hour.

BCX 571. BACHE: Samford Univ. 1-6 Hour.

BCX 572. BACHE: Samford Univ. 1-6 Hour.

BCX 573. BACHE: Samford Univ. 1-6 Hour.

BCX 574. BACHE: Samford Univ. 1-6 Hour.

CAS-College of Arts Sciences Courses

CB-Cell Biology Courses

CB 500. BioTeach. 3,6 Hours.

For teachers of science courses. Hands on experience. McWane Center BioTeach is a graduate-level introductory laboratory course in molecular biology designed for high-school science teachers. UAB faculty provide a lecture series covering topics that include AIDS, tuberculosis, cancer, forensic medicine, tropical diseases, neurobiology, human genetics, sickle cell anemia and ethical issues in genetic research. Lectures are coupled with hands-on, laboratory training in bacterial genetics, mutagenesis, DNA cloning, gel electrophoresis, polymerase chain reaction, DNA sequencing, forensic analysis, and applications of molecular biology. Science teachers will learn how to incorporate the laboratory experiments into their own classrooms and labs. BioTeach is a course in molecular and cellular biology primarily intended for in-service secondary education teachers, but also includes pre-service teachers. Students will receive state-of-the-art lectures from top UAB researchers on subjects that range from the biology of HIV/AIDS to molecular mechanism underlying hypertension. Each lecture is accompanied by a laboratory experience that the teachers can take back into their classrooms. Further, the teachers each develop a lesson plan that provides a format for teaching each of the BioTeach modules during a one-week secondary education science classroom experience. The Course is taught at McWane Science Center and can be taken for 1-6 credit hours, based on the students participation in the course.

CB 601. Dental Gross Anatomy. 8 Hours.

Dental Gross Anatomy 8 hours of graduate credit.

CB 698. Non Thesis Research Cell Biology. 1-15 Hour.

Non thesis research in Cell Biology.

CB 699. Thesis Research in Cell Biology. 1-15 Hour.

Thesis Research Cell Biology. Must have 3 member committee approved by the graduate dean and approved for master level candidacy before registering for course.

Prerequisites: GAC M

CB 700. Gross Anatomy of the Thorax, Abdomen, & Pelvis for Teacher Education. 2 Hours.

Human gross anatomy and dissection of the thorax, abdomen, and pelvis. This course will take current and future anatomy educators through the complete gross anatomy of the thoracic, abdominal, and pelvic cavities. Correlations to common medical illnesses and strategies for anatomy education will be emphasized throughout.

CB 710. Macromolecular Crystal. 3 Hours.

CB 712. Journal Club Developmental Biology. 1 Hour.

Journal Club in Developmental Biology.

CB 713. Journal Club in Growth Factors. 1 Hour.

Journal Club in Growth Factors.

CB 714. Journal Club Calcium Signaling. 1 Hour.

Journal club.

CB 715. Journal Club Biochemical Approaches to Cell Biology. 1 Hour.

Biochemical Approaches to Cell Biology Journal Club.

CB 716. Journal Club The Molecular Basis of Signalling in the Nervous System. 1 Hour.

The Molecular Basis of Signalling in the Nervous S.

CB 720. Journal Club Developmental Neurobiology. 1 Hour.

Developmental Neurobiology Journal Club.

CB 721. Cell Biology Laboratory Rotations. 5 Hours.

Laboratory Rotations.

CB 722. Journal Club Vascular Biology. 1 Hour.

Vascular Biology Journal Club. This course will present the latest understanding of the cellular and molecular biology of the vascular system, including discussions of cardiovascular control by the brain, hypertrophy and hyperplasia in the heart and blood vessels and the regulation of pressor and depressor hormones.

CB 723. Journal Club Membrances and Glycobiology. 1 Hour.

Journal Club Membrances and Glycobiology.

CB 724. Special Topics in Cell Biology. 3 Hours.

Topics in Cell Biology.

CB 728. Advanced Cell Biology. 3 Hours.

The course will cover an introduction to biochemical methodologies used in contemporary laboratories. Classic publications that illustrate novel biochemical schemes and address basic questions in cell biology will be analyzed and discussed.

CB 729. Mechanisms of Signal Transduction. 3 Hours.

This course will cover pathways of signal transduction in development, growth factor signaling, cytokine signaling in hematopoietic systems, signaling during inflammation, and mechanisms of signaling termination.

CB 730. Molecular Basis of Conformational Diseases. 3 Hours.

Molecular Basis of Conformational Diseases.

CB 731. Molecular Chaperones and Clinical Potential. 3 Hours.

Class goal is understanding basic mechanisms by which molecular chaperones recognize, bind and fold non-native polypeptides. Applications in immunotherapy for cancer treatment will be discussed.

CB 732. Developmental Biology. 3 Hours.

Basic mechanisms of vertebrate development.

CB 733. Advanced Topics in Cell Cycle and Cancer Genetics. 3 Hours.

Regulation of cell cycle and checkpoint control, genome instability, tumor suppressor genes, oncogenes and cancer epigenetics.

CB 734. Alzheimer s Disease and Related Dementias. 3 Hours.**CB 735. Mechanisms of Writing a Scientific Paper and NIH Grant. 3 Hours.**

Mechanisms of Writing a Scientific Paper and NIH Grant.

CB 736. Cell Cycle and Cancer Genetics. 3 Hours.

Cell Cycle and Cancer Genetics.

CB 737. Cell-Matrix Interactions and Disease. 3 Hours.

Developmental Biology.

CB 738. Selected Topics in Cell Biology. 3 Hours.**CB 740. Research in Cell Biology. 1 Hour.**

Research in Cell Biology.

CB 745. Protective/Pathogen T Cell Res. 3 Hours.**CB 746. Cell Cycle and Cancer Genetics. 3 Hours.**

Cell Cycle and Cancer Genetics.

CB 747. Cell Biology Seminar. 1 Hour.

Seminars in Cell Biology.

CB 748. Special Problems in Cell Biology. 1-5 Hour.

SPECIAL PROBLEMS IN CELL BIOLOGY.

CB 750. Graduate Gross Anatomy. 6 Hours.

Lectures, demonstrations, and dissection of all systems and regions of human body.

CB 751. Tissue Injury and Repair. 1 Hour.**CB 752. Graduate Histology. 3 Hours.**

Light microscopic features and ultrastructure of cells, fundamental tissues, and organ systems.

CB 753. Teaching Assist Grad Histology. 1-2 Hour.**CB 755. Graduate Neuroanatomy. 4 Hours.**

Gross and microscopic preparations of brain and spinal cord. Functional significance of tracts and nuclei.

CB 779. Special Problems Neuroanatomy. 1-4 Hour.

Special Problems in Neuroanatomy.

CB 788. Molecular Mechanisms of Neurodegeneration Diseases. 1-4 Hour.

Directed Readings.

CB 790. Developmental Neurobiology. 4 Hours.

Developmental Neurobiology.

CB 798. Doctoral Non-Dissertation Research. 1-15 Hour.

Non dissertation research credits.

CB 798B. Non-Dissertation Research. 1-15 Hour.**CB 799. Doctoral Level Dissertation Research in Cell Biology. 1-15 Hour.**

Dissertation research. Must have graduate dean approved 5 member committee and doctoral approved candidacy to take research credits.

Prerequisites: GAC D

CB 799B. Dissertation Research. 1-15 Hour.

Prerequisites: GAC D

CD-Clinical Dentistry Courses**CD 601. Advanced Endodontic Seminar I. 3 Hours.**

Special Topics in Endodontics.

CD 602. Special Topics in General Dentistry. 3-6 Hours.**CD 603. Special Topics in Oral and Maxillofacial Surgery. 1-12 Hour.****CD 604. Special Topics in Orthodontics. 3 Hours.****CD 605. Special Topics in Pediatric Dentistry. 1-6 Hour.****CD 606. Special Topics in Periodontics. 3-12 Hours.****CD 607. Removable Prosthodontic Seminar. 1-12 Hour.****CD 608. Special Topics in Radiology. 1-6 Hour.****CD 609. Fixed Prosthodontics Seminar. 1-12 Hour.****CD 610. Introduction to Medical Genetics. 3 Hours.****CD 611. Special Topics in Maxillofacial Prosthodontics. 1-6 Hour.****CD 612. Avanced Prosthodontics Clinic First Year Clinic. 1-12 Hour.****CD 613. Special Topics in Hospital Dentistry. 1-6 Hour.****CD 614. Periodonal Case Conferences. 3 Hours.****CD 615. Periodontal Literature Review Seminars. 3 Hours.****CD 616. Periodontal Board Topics. 1-3 Hour.****CD 617. Maxillofacial Pathology. 3 Hours.****CD 618. Maxillofacial Orthognathic Surgery. 3 Hours.****CD 619. Dentoalveolar Surgery. 3 Hours.****CD 620. Clinical Pediatric Dentistry I. 3-6 Hours.****CD 621. POSTGRADUATE MAXILLOFACIAL TRAUMA. 3 Hours.****CD 622. ORAL and MAXILLOFACIAL MICROBIOLOGY SEMINAR. 3 Hours.**

ORAL and MAXILLOFACIAL MICROBIOLOGY SEMINAR.

CD 623. POSTGRAD OMS SURGERY ANATOMY SEMINAR. 3 Hours.**CD 624. OMS Pathology Seminar. 3 Hours.****CD 625. Design and Analysis in Clinical Dental Research. 3 Hours.****CD 626. Surgical Implants in Dentistry. 3 Hours.****CD 627. Biocompatibility Testing/Biodegradation Phenomena. 3 Hours.****CD 628. Enamel Properties Acid Etching and Adhesion. 4 Hours.****CD 629. Ceramic Cements Alloy-Ceramic Systems Color Meas. 3 Hours.****CD 630. Clinical Biomaterials Research Methods. 3 Hours.****CD 631. Polymeric Biomaterials. 3 Hours.****CD 632. Biomaterials Seminar. 1 Hour.****CD 633. Alloy Systems in Dentistry. 3 Hours.****CD 634. Craniofacial Genetics. 3 Hours.****CD 635. Pediatric Dentistry Journal Club. 2 Hours.****CD 636. Hospital Dentistry. 2 Hours.****CD 637. Growth and Development-Genetics. 3 Hours.****CD 638. Current Topics in Dentistry. 1 Hour.****CD 639. Dental Management of Medically Compromised Patient. 2 Hours.****CD 640. Physical Diagnosis. 3 Hours.**

CD 641. Advanced Dental Materials III. 3 Hours.

The resident will develop an in-depth understanding of the clinical applications and effective manipulation of current dental materials. Dentin bonding agents, composite resin selection, placement and polymerization will be covered. An overview of biomaterials for dental implants, and ceramic materials for prosthodontics will also be presented.

CD 642. Biomaterials Book Review. 3 Hours.

The purpose of the book review is to strengthen the basic understanding of properties and behavior of different dental materials.

CD 643. Adv Clinical Prosth III. 6 Hours.

Advanced Clinical Prosthodontics III will provide students with a breadth of clinical experience in fixed, removable, implant, surgical, maxillofacial and other complex prosthodontics.

CD 644. Evidence Based Dentistry. 3 Hours.

Evidence based dentistry will teach students how to use literature as basis of clinical decisions.

CD 645. PBL: Adv Prosthodontics Topics. 3 Hours.

Topics in Advanced Prosthodontics. Permission of instructor required.

CD 646. Multidisciplinary Seminars I. 3 Hours.

Multidisciplinary seminars will teach the students how to interact with other disciplines in an informal setting and learn from these other disciplines.

CD 647. Treatment Planning Conference. 3 Hours.

Treatment planning conference will teach students how to generate a succinct and reasonable treatment sequence.

CD 648. Prosthodontic Case Conference. 3 Hours.

Prosthodontic case conference will teach students how to present completed treatment, and how to critically and professionally evaluate treatment outcomes.

CD 649. Prosthodontics Lit Review. 3 Hours.

Prosthodontics literature review will teach students how to critically evaluate literature, and to be familiar with current concepts in prosthodontics.

CD 650. Advanced Topics in Hospital Dentistry. 1-6 Hour.**CD 651. Advanced Endodontics Seminar II. 3 Hours.**

Advanced Topics in Endodontics.

CD 652. Advanced Topics in General Dentistry. 3-6 Hours.**CD 653. Advanced Topics in Oral Surgery. 3-6 Hours.****CD 654. Advanced Topics in Orthodontics. 3 Hours.****CD 655. Advanced Topics in Pediatric Dentistry. 1-6 Hour.****CD 656. Advanced Topics in Periodontics. 1-12 Hour.****CD 657. Advanced Clinical Prosthodontics Second Year Clin. 3-12 Hours.****CD 658. Advanced Topics in Radiology. 1-12 Hour.****CD 659. Advanced Topics Fixed Prosthodontics. 3-12 Hours.****CD 660. Advanced Topics in Maxillofacial Prosthetics. 1-6 Hour.****CD 661. Physical Properties of Biomaterials. 1-3 Hour.****CD 662. Laboratory Methods for Biomaterials Research. 2-4 Hours.****CD 663. Diagnosis and Screening Procedures in Dentistry. 3 Hours.****CD 664. Grand Rounds in Pediatric Dentistry. 2-3 Hours.****CD 665. Maxillofacial Seminar. 3 Hours.**

Physiology and Concepts of Occlusion.

CD 666. Clinical Maxillofacial Prosthetics. 1-3 Hour.**CD 667. Selected Topics in Anatomy of the Head and Neck. 3 Hours.****CD 668. Postgraduate Oral Pathology. 3 Hours.****CD 669. Clinical Pediatric Dentistry II. 3 Hours.****CD 670. Board Case Reviews in Pediatric Dentistry. 3 Hours.****CD 671. Case Presentations in Pediatric Dentistry. 1 Hour.****CD 672. Advanced Topics in OMS. 5 Hours.****CD 673. Special Topics in OMS Trauma. 4 Hours.****CD 674. Advanced Topics in OMS - Orthognathic. 4 Hours.**

Advanced Topics in OMS - Orthognathic.

CD 675. Special Topics in OMS - Patient Care. 4 Hours.**CD 676. Advanced Topics in Oral Pathology. 4 Hours.****CD 677. Advanced Prosthodontics Third Year Clinic. 3 Hours.****CD 678. Board Preparation in Pediatric Dentistry. 3 Hours.**

Review course for pediatric dental residents.

CD 679. Fundamentals of Pediatric Dentistry. 1-6 Hour.**CD 680. Dental Clinical Pathology. 3 Hours.****CD 681. Clinical Pedodontics III. 3 Hours.****CD 682. Special Topics in Endodontics. 3 Hours.****CD 683. Advanced Dental Materials I. 3 Hours.**

Advanced course in dental materials.

CD 684. Advanced Dental Materials II. 3 Hours.

Advanced course in dental materials II.

CD 685. Advanced Endodontic First Year Clinic. 3 Hours.**CD 686. Advanced Endodontic Second Year Clinic. 3 Hours.****CD 687. Advanced Clinical Dentistry. 3 Hours.**

Advanced course in clinical dentistry.

CD 688. Special Pathology. 1 Hour.**CD 689. Conscious Sedation. 3 Hours.****CD 690. Physiology and Concepts of Occlusion. 3 Hours.****CD 691. Special Topics in Biomaterials Science. 1-6 Hour.****CD 692. Advanced Prosthodontic Seminar. 1-12 Hour.****CD 693. Special Topics in OMS. 5 Hours.****CD 694. Advanced General Dentistry Seminars (I-IV). 1 Hour.****CD 695. Literature Review in Pediatric Dentistry. 3 Hours.****CD 696. Dental Radiology. 3 Hours.****CD 697. Advanced Restorative Technique. 3 Hours.****CD 698. Master s Level Non-Thesis Research. 1-6 Hour.****CD 699. Master s Level Thesis Research. 1-6 Hour.**

Prerequisites: GAC M

CD 700. Cranio Deformities. 3 Hours.

Embryology: Review of H&N development. Genetics: Review of H&N disorders. Cleft lip: Diagnosis and management. Common craniofacial disorders; Diagnosis and management of Apert's, Crouzons, and Treacher-Collins, Hemifacial microsomia and other craniofacial disorders.

CD 701. Post-Graduate Micro Surgery. 3 Hours.

To understand the history of microsurgery; materials and instruments; coagulations and anticoagulants; technique or minor repair and vascularized tissue transfer.

CD 702. Post-Graduate Esthetic Surgery. 3 Hours.

Understand basic concepts of facial cosmetic surgery and become competent in diagnosis and treatment planning. The resident should learn surgery techniques of facial cosmetic surgery.

CD 703. Post-Graduate TMJ Disorders. 3 Hours.

To Understand the anatomy and biomechanics of the TMJ; the pathological conditions that affect the TMJ; the imaging modalities that can be utilized to aid in diagnosing TMD; and the various medical treatment options in managing TMD.

CD 704. Post-Grad Surg Implantology. 3 Hours.

Enrich the resident experience by providing in-depth discussion on the various surgical modalities that can aid in proper implant placement.

CD 705. Orothognatic Surgery. 3 Hours.

Understand the principle of orthognatic surgery.

CD 706. Board Exam Topics. 3 Hours.

To allow students tiime for study and laboratory activities in preparation of mock board exam, or the ABP examination.

CD 707. Fundamentals I. 5 Hours.**CD 708. Fundamentals II. 5 Hours.****CD 709. Dentistry & Culture. 3 Hours.****CD 710. Ethics I. 3 Hours.****CD 711. Dental Gross Anatomy. 6 Hours.****CD 712. General Pathology. 3 Hours.****CD 713. Microbiology. 3 Hours.****CD 714. Pharmacology. 3 Hours.****CD 715. Systemic Pathology. 3 Hours.****CD 716. Oral Pathology. 3 Hours.****CD 717. Multidisciplinary Seminars II. 3 Hours.****CD 718. Implant Dentistry Case Conf.. 3 Hours.****CD 719. Implant Evidence Based Dent. 3 Hours.****CD 720. Surgical Placement of Implants. 3 Hours.****CD 721. Oral & Skeletal BiologyJour. 2 Hours.****CD 722. Advanced Craniofacial Growth. 3 Hours.****CD 723. Neuroanatomy. 6 Hours.****CD 724. Cardiovascular & Renal Systems. 6 Hours.****CD 725. Dental Microbiology. 1 Hour.****CD 726. Genetics. 2 Hours.****CD 727. Craniofacial Syndrome Series. 3 Hours.****CD 728. Advanced Oral Pathology. 3 Hours.****CDS-Clinical Diagnostic Sci Courses****CDS 500. Fundamentals of Phlebotomy and Body Fluid Collection. 1 Hour.**

An in depth course in phlebotomy covering aspects of safety procedures, hygiene, capillary puncture, venipuncture, arterial access and maintenance, intravenous access and maintenance, drug administration via IV, intramuscular and subcutaneous methods and non-blood collections of bodily fluids.

CDS 520. Competencies in Genetics for Health Professionals. 2 Hours.

Educates health professional students about core competencies in genetics to prepare them to integrate genetics knowledge, skills, and attitudes into routine health care, thereby providing effective and comprehensive services to individuals and families. This course is based on the NCHPEG core competencies for health professionals.

CDS 535. Medical Genetics Across the Life Span. 1 Hour.

Medical genetics applications in patient care; genetic family and medical history collection; indications for referral to medical genetics; appropriate use and interpretation of genetic testing; ethical issues in medical genetics.

CDS 550. Introduction to Medical History Taking and Physical Examination. 3 Hours.

This course introduces the learner on how to conduct a comprehensive medical history, perform a physical examination, and report the findings in a systematic and concise format.

CDS 605. Survival Spanish for Health Professionals. 1 Hour.

Health care professionals will be introduced to basic vocabulary, useful questions and expressions in Spanish needed to communicate in practical health care situations. Students will participate in speaking exercises, dialogue, and role-play activities (field-specific scenarios).

CDS 610. Research Design and Statistics. 3 Hours.

This course will introduce the student to clinical research methods and review concepts involved in descriptive and inferential statistics. Topics covered include, overview of the research process, literature review, research hypothesis, research designs, sample selection, measurement methods, descriptive statistics, and inferential statistics.

CDS 625. Analysis of Scientific Publications. 3 Hours.

This course is designed to prepare students to critically evaluate medical/scientific literature and to write a master's level papers. The ability to critically analyze scientific publications will be incorporated into the process of making medical decisions.

CE-Civil Engineering Courses**CE 516. Mechanical Vibrations. 3 Hours.**

Free and forced single-degree-of-freedom systems. Multi-degree-of-freedom systems. Damped, forced two-degree-of-freedom systems. Simple continuous systems. CE 215 (Dynamics) and E 220 (Mechanics of Solids) are prerequisites for this course.

CE 520. Advanced Mechanics. 3 Hours.

Variation of stress at point including determination of principal and maximum shear stresses. Basic problems involving symmetrical deformation; thickwall cylinders, spheres, and rotating disk. Torsions of noncircular sections. Curved beams. Failure Theories. Unsymmetrical bending and shear center. CE 220 (Mechanics of Solids) is a prerequisite for this course.

CE 526. Foundation Engineering. 3 Hours.

Application of principles of soil mechanics to: determine bearing capacity and settlement of spread footings, mats, single piles and pile groups; site investigation, evaluate data from field and laboratory tests; estimation of stresses in soil masses; lateral resistance of piles and pile groups; retaining walls, sheetpiles and coffer-dams. CE 332 (Soil Engineering) and CE 455 (Reinforced Concrete Design) are prerequisites for this course.

CE 530. Water Supply/Drainage Design. 3 Hours.

Water requirements; wastewater characteristics. Hydraulics and design of sewers; distribution, and reuse of water. Development of water supplies; design considerations. CE 337 (Hydraulics) is a prerequisite for this course.

CE 531. Energy Resources. 3 Hours.

Overview of the various energy resources ζ oil, natural gas, coal, nuclear, hydro, solar, geothermal, biomass, wind, and ocean energy resources, in terms of supply, distribution, recovery and conversion, environmental impacts, economies, policy, and technology. Concepts and opportunities for energy conservation; including electric power generation, changing role of electric utilities, transportation applications, and energy use in developing countries. Field trips.

CE 533. Solid and Hazardous Wastes Management. 3 Hours.

Overview of waste characterizations, regulations, and management options.

CE 534. Air Quality Modeling and Monitoring. 3 Hours.

Atmospheric pollutants; effects, reactions, and sources. Air pollution meteorology and dispersion modeling. Ambient monitoring. ME 250 (Introduction to Thermodynamic Sciences) is a prerequisite for this course.

CE 537. Environmental Experimental Design and Field Sampling. 3 Hours.

Experimental design, sensitivity analyses, water sampling, and flow monitoring. Receiving water chemical reactions. Field investigations. CE 344 (Civil Engineering Analysis I) is a prerequisite for this course.

CE 537L. Environmental Experimental Design and Field Sampling Lab. 0 Hours.

Lab experiences in environmental experimental design and field sampling.

CE 542. Hwy Materials and Construction. 3 Hours.

Properties of materials used in highway construction. Construction methods and management. CE 332 (Soil Engineering) and CE 345 (Transportation Engineering) are suggested prerequisites for this course.

CE 543. Pavement Design & Construction. 3 Hours.

Analysis of stresses and strains in pavement systems. Design and construction of flexible and rigid pavements, base courses and subgrades. Effects of loading on pavement life.

CE 544. Civil Egr Analysis II. 3 Hours.

Sampling and experimental design. Hypotheses testing. Decision Analyses. Multiple regression analyses. Nonparametric methods. Analysis of experimental data in civil engineering research; regression, experimental design, non-parametrical analysis. CE 344 (Civil Engineering Analysis I) is suggested as a prerequisite for this course.

CE 553. Design of Wood Structures. 3 Hours.

Design and detailing of timber structures. Properties and specifications for dimension and glulam timber. Design of beams, columns, beam-columns, connections (nails and bolts), roof diaphragms, and shear walls. Design of timber structures to meet the requirements of the National Design Specifications Standards. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 554. Design of Masonry Structures. 3 Hours.

Design and detailing of masonry structures. Nomenclature, properties, and specifications for components. Design of assemblages, simple masonry structures, unreinforced and reinforced elements, and complex masonry structures. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 556. Prestressed Concrete Design. 3 Hours.

Principles and concepts of design in prestressed concrete including elastic and ultimate strength analysis for flexural, shear, bond, and deflections. Principles of concordancy and linear transformation for indeterminate prestressed structures. CE 455 (Reinforced Concrete Design) is a prerequisite for this course.

CE 557. Concrete Technology. 3 Hours.

Properties of concrete in relation to specifying, purchasing, and evaluating concrete materials. Fresh and hardened concrete properties. Concrete mix design procedures. Effects of finishing, curing, weather conditions, and various construction procedures. Ready mix concrete production and field placement techniques. Specifications writing to ensure good quality concrete and field inspection procedures. Case studies of problems in concrete construction. CE 222 (Civil Engineering Materials Laboratory) is a prerequisite for this course.

CE 560. Structural Mechanics. 3 Hours.

Elastic beam deflections, beam columns, lateral torsional buckling, column stability, plastic design, plate bending, yield line theory.

CE 561. Introduction to the Finite Element Method. 3 Hours.

Concepts and applications of the finite element method. Development and applications of basic finite elements. Software use. CE 220 (Mechanics of Solids) is a prerequisite for this course.

CE 562. Advanced Structural Analysis. 3 Hours.

Analysis of indeterminate structures using classical and matrix methods. Use of large-scale computer programs. A grade of C or better in CE 360 (Computer Methods in Civil Engineering) or its equivalent is required.

CE 564. Structural Dynamics. 3 Hours.

Closed form and numerical solutions to single-degree-of-freedom structural models. Analysis of multistory frames. Computer application and seismic analysis. Techniques of modal analysis. CE 215 (Dynamics) and CE 360 (Structural Analysis) are prerequisites for this course.

CE 567. Wind and Seismic Loads. 3 Hours.

Methods for calculating loads on structures caused by extreme winds and earthquakes. Calculation of wind loads on various types of structures according to theory and codes. Determination of earthquake loads on structures using structural dynamics and codes. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 568. Bridge Engineering. 3 Hours.

Bridge loads, steel beam bridges, composite beam bridges, bridge bearings, reinforced and prestressed concrete slab and T-beam bridges, bridge evaluations and ratings, upgrade methodologies; computer applications. CE 450 (Structural Steel Design) and CE 455 (Reinforced Concrete Design) are prerequisites for this course.

CE 580. Introduction to Water and Wastewater Treatment. 3 Hours.

Physical unit operations, and chemical/biological unit processes for water and wastewater treatment. Design of facilities for treatment. Treatment and disposal of sludge. CE 236 (Environmental Engineering) is a prerequisite for this course.

CE 585. Engineering Hydrology. 3 Hours.

Hydrologic principles including hydrologic cycle, precipitation data, and stream-flow measurements. Applications to engineering problems; stream-flow analysis and watershed management.

CE 590. Special Topics in (Area). 3 Hours.

CE 600. Sustainable Construction. 3 Hours.

Study of sustainable construction techniques and best practices. Provides an understanding of the interdependencies between planning, designing, building, operating, and demolishing the built environment and their impacts on the natural environment. Course topics will include: (1) issues of resource efficiency, economics, ethics, waste, human health, environmental justice, and industrial ecology; (2) alternative practices that significantly reduce adverse environmental impacts of built infrastructure, and (3) explore past and present thinking of engineering practitioners in this newly emerging discipline.

CE 601. Construction Methods. 3 Hours.

Provides an overview of construction methods, building systems, material and equipment used in the construction of buildings, earthworks, bridges and roads. Excavation, formwork, concrete, masonry, and steel erection methods. Types of foundations that can be used for a project are presented.

CE 602. Construction Contracting, Bidding, and Estimating. 3 Hours.

Estimation of construction project costs: direct and indirect, labor, material, and equipment costs. Overhead and profit, bidding, computer-based estimating. Introduction to the U.S. legal system as it applies to civil engineering and construction. Fundamental concepts of contract and tort law, claims, risk management, business formation and licensing, agency, insurance and bonding, and real property.

CE 603. Constrt Acct & Fin Mgmt. 3 Hours.

Covers financial accounting and cost control concepts dealing with the integration and management of both company and project-level revenue and expense. It shows how effective cost control methodology and data is essential to monitoring and controlling current project budgets as well as developing accurate future bids. Course covers accounting systems unique to construction companies and financial analysis methods typically employed; progress payment disbursement; forecasting and trends; cash flow life cycle theory; computer applications; project funding; and the use of cost information and associate reports.

CE 604. International Construction Contracts and Law. 3 Hours.

Provides an overview of the fundamental aspects of the law that affects construction and engineering companies as well as the project owners. Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, the roles of the typical participation in the process, and dispute resolution.

CE 605. Project Management. 3 Hours.

Presents the theory and practice of project management as a distinct discipline with applications in time, cost, and performance management. Managerial, organizational, behavioral and cost benefit aspects of project management are covered, as well as various applied models for organizing, executing, and monitoring a project. Basic estimating techniques to determine cost and time for construction work packages are discussed followed by scheduling model techniques to include the Critical Path method (CPM), Precedence Diagramming Method (PDM), Program Evaluation and Review Technique (PERT), and Gantt charts.

CE 606. Advanced Project Management. 3 Hours.

Directed study of selected topics in construction management. The schedule of classes will list topics selected. Topics will include: business policy and problems relating to construction companies, contractors' organization, financial management, project management, supervision, cost analysis and equipment economics, team building, professional ethics, leadership and topics in construction law.

CE 607. Engineering Entrepreneurship. 3 Hours.

Course focuses on the entrepreneurial engineer--a new type of engineer who needs a broad range of business skills and knowledge above and beyond a strong science and engineering background. The course will introduce engineering students to the key aspects of engineering entrepreneurship including business planning, solving problems, risk taking, financing, marketing, and entrepreneurial leadership. The students will also be introduced to the many opportunities and challenges that accompany starting and operating an entrepreneurial venture. Entrepreneurial company leaders will present their experiences and share their leadership styles as part of the course.

CE 608. Green Building Design. 3 Hours.

Quantitative introduction to the principles of "Green Building Design". Provides students an understanding of the interdependencies between economics, technology, design, building occupation and the subsequent impact on the natural environment. Course will emphasize green building materials, new technologies, and sustainable construction methods. Course will also include LEED Case Studies (industrial, commercial, residential, and institutional examples).

CE 609. Adv Topics in Engineering Law. 3 Hours.

Course will cover advanced topics in engineering law as it relates to sustainable design and construction practices. Examples include BIM, crane regulations, safety, international contracts and joint venture, term sheets, etc.

CE 610. The Engineered Environment. 3 Hours.

Fundamentals of environmental engineering as they apply to the construction of the built environment and contemporary issues faced by engineers in developing nations such as Egypt. Topics included Air pollution, solid waste management, water treatment, environmental ethics, etc.

CE 612. Theory of Elasticity. 3 Hours.

Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems.

CE 615. Theory of Elastic Stability. 3 Hours.

Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability. CE 220 (Mechanics of Solids) is a prerequisite for this course.

CE 617. Theory of Plates and Shells. 3 Hours.

Linear theory and solutions of plates and various shapes. Large deflection theory and solutions of rectangular and circular plates. Membrane and bending theories of shells. Solutions of problems in conical, cylindrical, and spherical shell.

CE 621. Transportation Engineering Seminar. 1 Hour.

Seminar focusing on student research and guest presentations of various topics of interest to graduate transportation engineering students.

CE 622. Traffic Flow Theory. 3 Hours.

Microscopic and macroscopic traffic flow characteristics. Traffic flow analytical techniques including car-following models, traffic stream models, shock wave analysis. Queuing analysis and gap acceptance. Simulation models for network analysis. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 623. Non-Motorized Transportation Design and Planning. 3 Hours.

Urban planning principles that support non-motorized transportation, local bicycle or pedestrian plans, non-motorized transportation safety related considerations, non-motorized transportation design including traffic calming techniques, procedures for capacity analysis of pedestrian facilities.

CE 624. Simulation Models for Transportation Applications. 3 Hours.

Basic concepts of simulation models for analysis and optimization of transportation systems. Experimentation with planning simulation models and traffic models for signal timing and capacity analysis. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 625. Intelligent Transportation Systems. 3 Hours.

Legal, institutional and planning issues. System architecture, telecommunication techniques, Advanced User Services, intermodal systems, deployment programs, cost and benefit evaluation.

CE 628. Construction Management Capstone Case Studies, Part 1. 1 Hour.

Students review case studies involving project planning and risk assessment or individual topical study.

Prerequisites: CE 669 [Min Grade: C] and CE 670 [Min Grade: C] (Can be taken Concurrently)

CE 629. Construction Management Capstone Case Studies, Part 2. 1 Hour.

Students review case studies emphasizing project control and coordination.

Prerequisites: CE 628 [Min Grade: C]

CE 630. Construction Management Capstone Case Studies, Part 3. 1 Hour.

Students review case studies emphasizing technology advancement in construction methods and project management.

Prerequisites: CE 628 [Min Grade: C] and CE 629 [Min Grade: C]

CE 631. Environmental Law. 3 Hours.

Law as it applies to the practicing environmental engineer. New and emerging regulations.

CE 632. Industrial Waste and Wastewater Treatment. 3 Hours.

Solid wastes and wastewaters from various industries. Assessment of treatability, system design, and equipment selection.

CE 633. Solid and Hazardous Waste Management. 3 Hours.

Provides students a quantitative introduction to solid and hazardous waste characterizations, international regulations, and management options. course topics to include (1) Solid waste management hierarchy (reduce, reuse, recycle, recovery, responsible disposal); (2) Dry tomb landfill design; (3) Hazardous waste identification and treatment/disposal.

CE 636. Stormwater Pollution Management. 3 Hours.

Quality and quantity of stormwater. Receiving water problems and sources of pollutants. Runoff quality and quantity characterizations. Erosion control. Selection and design of controls; regulations.

CE 638. Water and Wastewater Chemistry. 3 Hours.

Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges.

CE 639. Sediment Sources and Controls. 3 Hours.

Erosion and sediment transport areas; design of common erosion control practices.

CE 640. Wastewater Treatment Engineering. 3 Hours.

Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air flotation, activated sludge process, trickling filters, and rotating biological contactors, stabilization ponds and aerated lagoons, anaerobic processes for wastewater treatment and sludge digestion. Ultimate disposal of wastewater residues and considerations of discharge criteria.

CE 641. Civil Engineering Seminar. 1 Hour.

Seminar focusing on guest presentations of various civil and environmental engineering topics of interest for CEE Masters students. Mandatory enrollment once per academic year.

CE 646. Traffic Engineering Operations. 3 Hours.

Highway and Intersection capacity analysis, traffic signal timing and phasing, coordination, signal networks, freeway operations, nonsignalized traffic control techniques. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 648. Urban and Transportation Planning. 3 Hours.

Land use planning for transportation systems; trip generation, trip distribution, and traffic assignment. CE 345 (Transportation Engineering) or an equivalent is required.

CE 649. Engineering Liability. 3 Hours.

Laws related to liability for engineering design in the context of product liability and construction projects; roles and liabilities between various parties involved in construction projects.

CE 650. Advanced Structural Steel. 3 Hours.

Beams, columns, tension members, and connections; current research. CE 450 (Structural Steel Design) or its equivalent is required.

CE 655. Advanced Reinforced Concrete. 3 Hours.

Beam, column, and slab actions; current research. CE 455 (Reinforced Concrete Design) or its equivalency is required.

CE 658. Engineering Management. 3 Hours.

Management techniques for the practicing engineer.

CE 662. Advanced Structural Analysis. 3 Hours.

Analysis of indeterminate structures using classical and matrix methods. Use of large-scale computer programs. A grade of C or better in CE 360 (Computer Methods in Civil Engineering) or its equivalency is required.

CE 663. Finite Element Methods. 3 Hours.

Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems.

CE 669. Advanced Project Management. 3 Hours.

Skills generally required for sound project management in a variety of management settings are studied in addition to specific management issues typically associated with engineering and construction companies. Students are introduced to the Project Management Institute's Body of Knowledge (PMBOK). A discussion of corporate organizational structures and the evolving use of project management processes helps establish an appreciation for the role of a Project Manager. The elements of a project and the role and responsibilities of the Project Manager are studied in depth. Students are also acquainted with risk management concepts, financial, labor, safety, equipment, contracting issues facing managers in the engineering and construction environment. Particular emphasis is placed on individual management strengths and weakness, team building, and characteristics of successful companies. One of the primary vehicles for discussion will be small case studies from real companies and the outside reading of one or two relevant topical books.

CE 670. Const Estimating & Bidding. 3 Hours.

Prerequisites: CE 669 [Min Grade: C] and CE 672 [Min Grade: C]

CE 671. Constr Liability & Contracts. 3 Hours.

This course provides an overview of the fundamental aspects of the laws that affect construction and engineering companies as well as the project owners. Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, the roles of the typical participation in the process, and dispute resolution. Students will learn the importance of contract language negotiations and the impact of project risk transfer.

Prerequisites: CE 669 [Min Grade: C]

CE 672. Constr Methods and Equipment. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

Prerequisites: CE 669 [Min Grade: C](Can be taken Concurrently)

CE 673. Construction Contracting Bidding and Estimating. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

Prerequisites: CE 670 [Min Grade: C] and CE 672 [Min Grade: C]

CE 674. Green Bldg Desgn/Construction. 3 Hours.

This course provides an introduction to the emerging trends in green building sustainable design and construction. The Course will include instruction suitable to prepare students for the Leadership in Energy and Environmental (LEED®) Green Building Rating System certification exam.

Prerequisites: CE 670 [Min Grade: C] and CE 672 [Min Grade: C]

CE 675. Fundamentals of Financial & Managerial Accounting for Non-Financial Managers. 3 Hours.

This course provides an extensive overview of financial and managerial accounting concepts for non-financial managers. Students will learn the basic elements of accounting (Generally Accepted Accounting Practices). They will understand how typical financial records and financial statements are established for companies. Once the basics are understood, students will study how financial data is used for internal cost controlling, planning, and budgeting. Fundamental financial calculations associated with the time value of money, debt instruments, taxes, inflation, and cash flow estimates are emphasized. Students will be expected to demonstrate proficiency in the use of Excel business functions in solving financial problems.

Prerequisites: CE 670 [Min Grade: C] and CE 673 [Min Grade: C]

CE 676. Construction Project Risk Management. 3 Hours.

This course addresses the methodologies employed in the engineering and construction industries to assist in rational decision making in the face of uncertainty. The course reviews the fundamentals of common probabilistic theories and models, data sampling, hypothesis testing and the basics of Bayesian Decision Theory. In addition, basic financial analysis tools will be reviewed. Theoretical models will then be applied to specific examples encountered in engineering and construction decision making with emphasis on engineering economics applications.

Prerequisites: CE 669 [Min Grade: C]

CE 677. Construction Acct & Finance. 3 Hours.

Introduces students to some of the particular accounting needs, practices and methods unique to construction companies. Students will understand the details of budget preparation, cost tracking and reporting systems. Emphasis is placed on understanding the importance of linking detailed project planning, scheduling with cost accounting and reporting in the management of individual construction projects and the company as a whole. A broad overview of financial management of construction companies and the specific tools used to operate the enterprise are discussed. Business planning, financing and contracting strategies suitable for a cyclical demand industry are discussed.

Prerequisites: CE 669 [Min Grade: C]

CE 678. Constr Bus Sys & Info Tech. 3 Hours.

The use of information management systems design and construction operations is studied in detail. Emerging technology and state-of-the-art equipment and software will be discussed. The importance of information technology and equipment, and benefit cost tradeoffs for different company and project sizes will be discussed and investigated by students. A large portion of the course effort is the student group investigative topical research project and oral presentation.

Prerequisites: CE 669 [Min Grade: C]

CE 679. Constr Methods-Detail & Finish. 3 Hours.

This course is an extension of the concepts and technical terminology introduced in Construction Methods and Equipment. Topics explored in this course include green design/sustainable construction, finishing systems, windows and cladding, HVAC/plumbing, and roofing. The International Building Code will be examined, as well as fundamental engineering design, and construction methods. Upon completion, students will be better equipped to read and understand drawings and specifications, necessary skills for detailed estimating of cost and time.

Prerequisites: CE 672 [Min Grade: C]

CE 680. CM Capstone Studies. 3 Hours.

Students review case studies involving project planning and risk assessment; or individual topical study, case studies emphasizing project control and coordination; or individual topical study, case studies emphasizing technology advancements in construction methods and project management; or individual topical study.

Prerequisites: CE 669 [Min Grade: C] and CE 670 [Min Grade: C](Can be taken Concurrently)

CE 681. Environmental Chemistry. 3 Hours.

Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis, pesticides, chemical wastes.

CE 682. Water Treatment Engineering. 3 Hours.

Water sources and characteristics. Design and operations of water treatment facilities. Including lime softening operations, co-agulation, flocculation, clarification dissolved air flotation, filtration, disinfection, absorption, ion exchange and sludge.

CE 683. Water and Wastewater Treatment Processes Lab. 3 Hours.

Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation, settleability of biological sludges, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection, and sludge treatment processes.

CE 684. Construction Project Admin. 3 Hours.

This course is designed to provide a comprehensive overview of the important business, legal, and management aspects of construction management with emphasis on administrative procedures. The course is an extension of Advanced Project Management concepts with specific focus on the construction management issues facing owners, engineers, constructors, architects, and students to include the international business environment.

Prerequisites: CE 669 [Min Grade: C]

CE 685. Engineering Hydrology. 3 Hours.

Hydrologic principles including hydrologic cycle, precipitation data, and stream-flow measurements. Applications to engineering problems; stream-flow analysis and watershed management. A grade of C or better in CE 337 (Hydraulics) or its equivalency is required.

CE 686. Engineering Hydrogeology. 3 Hours.

Groundwater movement, natural quality, contamination, and restoration. Physical and chemical properties of groundwater. Well hydraulics and flow net analyses. Prevention and control of groundwater contamination. CE 485 (Engineering Hydraulics) and MA 252 (Differential Equations) are required.

CE 687. Stormwater Detention Pond Design. 3 Hours.

Stormwater problems and control methods. Urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits.

CE 688. Strategic Management and Leadership Applications in a Global Environment. 3 Hours.

This course is designed to prepare students to face the demanding management and leadership challenges facing construction and engineering industry leaders as competition becomes ever more globalized. The necessity to personally remain trained and relevant in the changing business environment is emphasized. Strong resume writing and oral interview skills are emphasized as a necessary skill for job seekers as well as job providers. Strategic planning, management and leadership in the built environment requires savvy leaders with exceptionally developed analytical and communications skills suitable for multi-disciplinary and multi-national ventures. Every individual and organization must continually innovate and reinvent to stay competitive. In a competitive environment, a strong working knowledge of the financial markets is essential and students are exposed to multiple lessons presented by financial industry practitioners. Students participate in a group project designed to reinforce the methodology associated with preparing and presenting a dynamic business plan. This course will provide the opportunity for students to discuss and research these concepts and to recognize the necessity to think independently, challenge conventional thinking, and visualize alternatives.

Prerequisites: CE 669 [Min Grade: C]

CE 689. Building Information modeling (BIM) Techniques. 3 Hours.

This course provides students with an overview of the evolution of BIM technology in the construction industry followed by hands-on training in the basic application of contemporary BIM software. Students will learn basic modeling skills and how to produce graphical presentations. Advanced applications of BIM technology will be discussed and demonstrated. Students will be provided with BIM software and will be required to complete a multi-step BIM model as a term project.

Prerequisites: CE 669 [Min Grade: C]

CE 690. Special Topics in (Area). 1-3 Hour.

Special Topics (Area).

CE 691. Individual Study in (Area). 1-4 Hour.

Individual Study (Area).

CE 692. CE Capstone Project. 3 Hours.

This course covers specific contemporary topics related to civil engineering practice and knowledge. Capstone project using case studies to apply skills, knowledge, techniques, and concepts developed in prior courses.

CE 693. Applied Research in CEE. 3-9 Hours.

Research tools, including elements of experimental design and proposal preparation. Effective communication, literature searches, and exploratory data analysis. Prerequisite: permission of instructor.

CE 694. Sustainable Construction. 3 Hours.

Provides students an understanding of the interdependencies between planning, designing, building, operating, and demolishing the built environment and their impacts on the natural environment. Course topics will include: (1) Issues of resource efficiency, economics, ethics, waste, human health, environmental justice, and industrial ecology; (2) Alternative practices that significantly reduce adverse environmental impacts of built infrastructure, and (3) Explore past and present thinking of engineering practitioners in this newly emerging discipline.

CE 695. Inatl Constr Contracts/Liab. 3 Hours.

Provides an overview of the fundamental aspects of the law that affects construction and engineering companies as well as the project owners. Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, the roles of the typical participation in the process, and dispute resolution.

CE 697. Master's Project. 3-9 Hours.

A UAB Master's Project must demonstrate evidence of scholarly study and writing that ultimately contributes to the scientific knowledge base. This course is designed to allow students the opportunity to develop original ideas or seek to advance knowledge through theory, conceptualization, design, testing of tools, instruments, or procedures relevant to the practice of civil engineering.

CE 698. Non-Thesis Research. 1-12 Hour.**CE 699. Thesis Research. 1-12 Hour.**

Prerequisites: GAC M

CE 712. Theory of Elasticity. 3 Hours.

Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems.

CE 715. Theory of Elastic Stability. 3 Hours.

Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability.

CE 717. Theory of Plates and Shells. 3 Hours.

Linear theory and solutions of plates of various shapes. Large deflection theory and solutions of rectangular and circular plates. Membrane and bending theories of shells. Solutions of problems in conical, cylindrical, and spherical shell.

CE 721. Transportation Engineering Seminar. 1 Hour.

Seminar focusing on student research and guest presentation of various topics of interest to graduate transportation engineering students.

CE 722. Traffic Flow Theory. 3 Hours.

Microscopic and macroscopic traffic flow characteristics. Traffic flow analytical techniques including car-following models, traffic stream models, shock wave analysis. Queuing analysis and gap acceptance. Simulation models for network analysis.

CE 723. Non-Motorized Transportation Design and Planning. 3 Hours.

Urban planning principles that support non-motorized transportation, local bicycle or pedestrian plans, non-motorized transportation safety related considerations, non-motorized transportation design including traffic calming techniques, procedures for capacity analysis of pedestrian facilities.

CE 724. Simulation Models for Transportation Applications. 3 Hours.

Basic concepts of simulation models for analysis and optimization of transportation systems. Experimentation with planning simulation models and traffic models for signal timing and capacity analysis.

CE 725. Intelligent Transportation Systems. 3 Hours.

Legal, institutional and planning issues. System Architecture, telecommunication technologies. Advanced User Services, intermodal systems, deployment programs, cost and benefit evaluation.

CE 731. Environmental Law. 3 Hours.

Law as it applies to the practicing environmental engineer. New and emerging regulations.

CE 732. Industrial Waste and Wastewater Treatment. 3 Hours.

Solid wastes and waste waters from various industries; assessment of treatability, system design, and equipment selection.

CE 736. Stormwater Pollution Management. 3 Hours.

Quality and quantity of stormwater. Receiving water problems and sources of pollutants. Runoff quality and quantity characterizations. Erosion control. Selection and design of controls; regulations.

CE 738. Water and Wastewater Chemistry. 3 Hours.

Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges.

CE 739. Sediment Sources and Controls. 3 Hours.

Erosion and sediment transport in urban areas, design of common erosion control practices.

CE 740. Wastewater Treatment Engineering. 3 Hours.

Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air flotation, activated sludge process, trickling filters, and rotating biological contactors, stabilization ponds and aerated lagoons, anaerobic processes for wastewater treatment and sludge digestion. Ultimate disposal of wastewater residues and considerations of discharge criteria.

CE 741. Civil Engineering Seminar. 1 Hour.

Seminar focusing on guest presentations on various civil and environmental engineering topics of interest for CEE Ph.D. students. Mandatory enrollment once per academic year.

CE 749. Engineering Liability. 3 Hours.

Laws related to liability for engineering design in the context of products liability and construction projects; roles and liabilities between various parties involved in construction projects.

CE 750. Advanced Structural Steel. 3 Hours.

Beams, Columns, tension members, and connections; current research.

CE 755. Advanced Reinforced Concrete. 3 Hours.

Beam, column, and slab actions; current research.

CE 758. Engineering Management. 3 Hours.

Management techniques for practicing engineers.

CE 763. Finite Element Methods. 3 Hours.

Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems.

CE 781. Environmental Chemistry. 3 Hours.

Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis, pesticides, chemical wastes.

CE 782. Water Treatment Engineering. 3 Hours.

Water sources and characteristics. Design and operation of water treatment facilities including lime softening operations, coagulation, flocculation, clarification, dissolved air flotation, filtration, disinfection, absorption, ion exchange, and sludge disposal.

CE 783. Water and Wastewater Treatment Processes Lab. 3 Hours.

Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation, settleability of biological sludges, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection, and sludge treatment processes.

CE 786. Engineering Hydrogeology. 3 Hours.

Groundwater movement, natural quality, contamination, and restoration. Physical and chemical properties of groundwater. Well hydraulics and flow net analyses. Prevention and control of groundwater contamination.

CE 787. Stormwater Detention Pond Design. 3 Hours.

Stormwater problems and control methods. Urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits.

CE 790. Special Topics in (Area). 1-3 Hour.

Special Topics(In Area).

CE 791. Individual Studies (In Area). 1-4 Hour.

Individual Studies(In Area).

CE 793. Applied Research in Civil and Environmental Eng.. 3 Hours.

Research tools, including elements of experimental design and proposal preparation. Effective communication, literature searches, and exploratory data analysis. Prerequisite: Permission of instructor.

CE 797. Environmental Health Engineering Internship. 6 Hours.

Off-campus internship experience working with industries, utilities or government agencies.

CE 798. Non-Dissertation Research. 1-12 Hour.**CE 799. Dissertation Research. 1-12 Hour.**

Prerequisites: GAC D

CH-Chemistry Courses**CH 525. Physical Chemistry I for Graduate Study. 3 Hours.**

Thermodynamics and chemical equilibria; and chemical kinetics. Prerequisites: Calculus II, College Physics II and General Chemistry II.

CH 526. Physical Chemistry II for Graduate Study. 3 Hours.

Quantum mechanics, chemical bonding, and molecular spectroscopy. Prerequisites: Calculus II, College Physics II and General Chemistry II.

CH 535. Organic Chemistry I for Graduate Study. 3 Hours.

Structure, nomenclature, properties, and reactivity of compounds with various organic functional groups: alkanes, alkenes, alkynes, alkyl halides and alcohols. Emphasis on the mechanisms of organic reactions and problem solving. Prerequisite: General Chemistry II.

CH 537. Organic Chemistry II for Graduate Study. 3 Hours.

Reactions of aromatic compounds and carbonyl containing functional groups: aldehydes, ketones, acids, esters and amides. Molecules of biological interest, such as proteins and carbohydrates. Prerequisite: Organic Chemistry I.

CH 540. Inorganic Chemistry I for Graduate Study. 3 Hours.

Chemical reactivity and descriptive chemistry in terms of structural and electronic parameters. Prerequisites: Organic Chemistry II and Organic Chemistry II laboratory with a grade of C or better.

CH 541. Transition Metal Chemistry. 3 Hours.

Atomic structure, chemical bonding characterization and reactivity of transition metal complexes. Prerequisites: Inorganic Chemistry and Physical Chemistry II.

CH 550. Instrumental Analysis for Graduate Study. 4 Hours.

Focus on modern analytical chemistry instrumentation including chemical separations, spectroscopies (atomic absorption, infrared, UV-visible, fluorescence), nuclear magnetic resonance spectroscopy, mass spectroscopy, and thermal analysis. Concurrent enrollment in CH 550L Instrumental Analysis Laboratory is required and correlated with lecture material. Prerequisites: Quantitative Analysis Techniques.

CH 550L. Instrumental Analysis Laboratory for Graduate Study. 0 Hours.

Instrumental Analysis Laboratory. Concurrent enrollment in CH 550 Instrumental Analysis for Graduate Study required.

CH 555. Quantitative Analysis for Graduate Study. 4 Hours.

Principles of analytical measurements, gravimetric analysis, spectrophotometric analysis, and chromatography, with emphasis on equilibrium and applications. Lecture and laboratory. Concurrent enrollment in CH 555L Quantitative Quantitative Analysis Lab required. Prerequisite: General Chemistry II.

Prerequisites: CH 550 [Min Grade: C]

CH 555L. Quantitative Analysis I for Graduate Study Lab. 0 Hours.

Emphasizing quantitative analysis laboratory. Concurrent enrollment in CH 555 Quantitative Analysis required.

CH 560. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 561. Advanced Biochemistry I. 3 Hours.

Advanced study of protein structure and function, enzymology, DNA structure, prokaryotic replication, transcription, and protein synthesis. Membrane structure and function, carbohydrate structure and function. Methods for isolating and characterizing macromolecule structure and function including chromatography, gel electrophoresis, CD, UV, and fluorescence spectroscopy, mass spectroscopy, X-ray crystallography and nuclear magnetic resonance spectroscopy.

Prerequisites: CH 560 [Min Grade: C]

CH 562. Advanced Biochemistry II. 3 Hours.

Continuation of Advanced Biochemistry I focusing on eukaryotic replication, transcription, translation, regulation of gene expression, genomics, proteomics, biological signaling. Prerequisites: Successful completion of CHEM 561.

Prerequisites: CH 561 [Min Grade: C]

CH 563. Biochemistry Laboratory. 3 Hours.

Introduction to modern bioanalytical techniques used for the expression, isolation and characterization of proteins and other biological macromolecules. Prerequisites: Quantitative Analysis and Biochemistry and permission of instructor.

CH 564. Physical Biochemistry Laboratory. 3 Hours.

Physical/analytical approaches (including mass spectroscopy and NMR) toward determination of macromolecular structures, ligand binding, and enzymology. Prerequisites: Background in physical chemistry I and II, quantitative analysis, and biochemistry. Permission of instructor required. **Prerequisites:** CH 325 [Min Grade: C] and CH 355 [Min Grade: C] and CH 461 [Min Grade: C]

CH 565. Structural Biochemistry. 3 Hours.

Principles of macromolecular structure, emphasizing proteins, nucleic acids, and macromolecular assemblies. Computational methods used to teach principles and modeling software used for construction of computer models of proteins and nucleic acids. Lecture and computer Laboratory.

CH 571. Medicinal Chemistry & Drug Discovery. 3 Hours.

An advanced organic course with emphasis on design strategies for discovering small organic molecule drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented.

CH 573. Electron Pushing and Total Synthesis. 3 Hours.

The advanced organic course is aimed to enhance students' comprehension of advanced organic chemistry theory and principles, and apply them to understand reaction mechanisms and tactic of total synthesis. It will cover different types of common organic reactions each week, for example, reactions involving anion intermediates, cation intermediates, rearrangement, photochemical process, carbonyl compounds, and other reactive intermediates. Using electron pushing for mechanistic reasoning will be emphasized.

CH 574. X-Ray Crystallography. 3 Hours.

Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 580. Polymer Chemistry I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

CH 580L. Polymer Chemistry I for Graduate Study Laboratory. 0 Hours.

Polymer Chemistry I Laboratory.

CH 581. Polymer Chemistry II. 3 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

Prerequisites: CH 580 [Min Grade: C]

CH 581L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 581 (Polymer Chemistry II).

Prerequisites: Concurrent enrollment in CH 581.

CH 583. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 584. Chemistry of Polymers and Polymeric Materials II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. The laboratory accompanying Polymer Chemistry II is NOT required.

CH 600. Foundations of Physical and Analytical Chemistry. 3 Hours.

Molecular thermodynamics and molecular reaction dynamics, chemical equilibrium and solubility in aqueous/organic solutions, and ligand binding to macromolecules in aqueous solution. Fall. 999999.

CH 601. Foundations of Organic and Inorganic Chemistry. 3 Hours.

Organic Bonding and structure, concerted pericyclic reactions, stereochemistry, effects of conformation, sterics and electronics on reactivity; and the study of reaction mechanisms with emphasis on nucleophilic substitution. Inorganic Bonding and structure including basic molecular orbital theory, the solid state, Lewis acid-base chemistry, coordination chemistry, reaction mechanisms for transition metal complexes and characterization of transition metal complexes.

CH 602. Principles of Chemical Instruction. 1 Hour.

Responsibilities of laboratory instructors, safety regulations, grading, teaching styles and formats, and instructional objectives. Fall.

CH 610. Laboratory Experiences in Chemistry I. 3 Hours.

Application of simple experiments to high school science programs.

CH 611. Laboratory Experiences in Chemistry II. 3 Hours.

Continuation of CH 602. Application of simple experiments to high school science programs. 999999.

CH 612. Polymer Chemistry for Teachers. 3 Hours.

Lecture and laboratory experiences focusing on natural and synthetic polymers. Morning lectures by polymer chemists with afternoon labs where polymers are synthesized and studied. Emphasis is on practical application and new developments in polymer chemistry. Experiments are suitable for high school science programs.

CH 613. Introductory Organic Chemistry for Teachers. 3 Hours.

A laboratory, lecture, demonstration course on the nature of carbon compounds including hydrocarbons, functional groups and their reactions. Emphasis given to laboratory experiments and demonstrations suitable for high school students.

CH 614. Introductory Biochemistry for Teachers. 3 Hours.

Lecture series covering carbohydrates, lipids, and proteins. Emphasis given to practical applications and relationship between chemistry and biology. Aspects of nutrition are discussed.

CH 615. Introductory Biochemistry for Teachers II. 3 Hours.

Lecture series covering vitamins, minerals, enzymes, biochemical energy and metabolism. Strong connections between chemistry and biology. Practical applications are emphasized.

CH 616. Chemical Demonstrations. 3 Hours.

A laboratory-based course exploring the teaching potential of selected chemical reactions. Teachers perform at least 50 demonstrations in the laboratory and share ways they can use these in their own classes. Emphasis on facilitating learning of chemistry.

CH 617. Chemical Demonstrations II. 3 Hours.

At least 50 demonstrations will be performed. Focus is on safe, practical and effective experiments suitable for high school students.

CH 619. Special Topics in Chemical Education. 3 Hours.

Topics determined by interest of students and faculty.

CH 625. Molecular Structure and Spectroscopy. 3 Hours.

Classical and quantum mechanical descriptions of molecular structure and bonding. Basic principles and techniques of molecular spectroscopic methods. Exercises and experiments with computational software and spectroscopic instrumentation will be conducted.

CH 629. Special Topics in Physical Chemistry. 3 Hours.

Topics determined by interest of students and faculty. Typical are computational chemistry, molecular spectroscopy, nuclear magnetic resonance. Topics determined by interest of students and faculty.

Prerequisites: CH 600 [Min Grade: C]

CH 630. Physical Organic Chemistry. 3 Hours.

Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

CH 631. Organic Reactions and Their Mechanisms. 3 Hours.

Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Prerequisite: Spring.

Prerequisites: CH 630 [Min Grade: C]

CH 632. Organic Reactions and Synthesis. 3 Hours.

Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Spring.

Prerequisites: CH 631 [Min Grade: C]

CH 633. Reactive Intermediates and Conservation of Bonding. 3 Hours.

Behavior of organic molecules in static and reactive situations. Spring.

Prerequisites: CH 631 [Min Grade: C]

CH 639. Special Topics in Organic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

Prerequisites: CH 327 [Min Grade: C]

CH 640. Bonding and Structure in Inorganic Compounds. 3 Hours.

Advanced treatment of bonding in main group and transition metal compounds, and a study of its relationship properties of compounds. Spring.

Prerequisites: CH 540 [Min Grade: C]

CH 642. Organometallic Chemistry and Catalysis. 3 Hours.

Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Summer (alternate years).

Prerequisites: CH 640 [Min Grade: C] or CH 740 [Min Grade: C]

CH 649. Special Topics in Inorganic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

CH 650. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. The course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data. 999999.

CH 651. Advanced Analytical Chemistry II. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. This course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

CH 656. Analytical Separations. 3 Hours.

Advanced treatment of distillation, extraction, gas chromatography, HPLC, TLC, and GC-MS.

Prerequisites: CH 551 [Min Grade: C]

CH 659. Special Topics in Analytical Chemistry. 3 Hours.

Introduction to thermally initiated physical and chemical processes in the condensed phase systems such as liquids, crystalline solids, and glasses (amorphous solids). The course covers the use of calorimetry, thermogravimetry, and thermomechanical methods for exploring thermodynamics and kinetics of crystallization, glass transition, solid-solid and helix-coil transitions, decomposition, polymerization, etc.

CH 660. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 661. Biochemistry II. 3 Hours.

Biochemistry II: Structure and function of proteins, membranes, membrane proteins, and nucleic acids. Ligand binding and enzyme kinetics. Molecular genetics (replication, transcription, translation) and the control of gene expression and protein synthesis.

CH 663. Biochemistry Laboratory. 3 Hours.

Introduction to modern analytical techniques used for the isolation and characterization of biological macromolecules.

CH 664. Biophysical Chemistry. 3 Hours.

Common physical methods for understanding the structure and stability of macromolecules that include several spectroscopic, thermodynamic and computational methods. Underlying physical principle described, instrumentation discussed, and examples cited from the literature. Spring.

Prerequisites: CH 323 [Min Grade: C]

CH 669. Special Topics in Biochemistry. 3 Hours.

Detailed consideration of areas of special interest.

Prerequisites: CH 462 [Min Grade: C]

CH 670. Chemical Literature. 3 Hours.

Use of on-line literature and development of searching techniques.

CH 671. Medicinal Chemistry and Drug Discovery. 3 Hours.

Description. Emphasis on design strategies for small organic drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented. Prerequisites include undergraduate organic chemistry (CH235 and CH237) and undergraduate biochemistry (CH461) or equivalent. 999999.

Prerequisites: CH 325 [Min Grade: C] and CH 237 [Min Grade: C] and CH 461 [Min Grade: C]

CH 672. Chemistry of Natural Products. 3 Hours.

The principal focus of this course will be the introduction of synthesis and medicinal chemistry of natural products. Drugs discovery using natural products, with specific examples in the areas of antibacterials, anticancer, and analgesic drugs will be introduced. An overview of structural classes, biosynthetic pathways and application of asymmetric synthesis in the synthesis of specific examples from each class will be discussed. This course is intended for undergraduate students at the senior level.

CH 673. Electron Pushing and Total Synthesis. 3 Hours.

The advanced organic course is aimed to enhance students' comprehension of advanced organic chemistry theory and principles, and apply them to understand reaction mechanisms and tactic of total synthesis. It will cover different types of common organic reactions each week, for example, reactions involving anion intermediates, cation intermediates, rearrangement, photochemical process, carbonyl compounds, and other reactive intermediates. Using electron pushing for mechanistic reasoning will be emphasized.

CH 674. X-Ray Crystallography. 3 Hours.

Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 680. Polymer Chemistry I. 4 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

CH 680L. Polymer Chemistry I Laboratory. 0 Hours.

Polymer Chemistry I Laboratory required with CH 680 lecture.

CH 681. Polymer Chemistry II. 4 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 680L.

Prerequisites: CH 680 [Min Grade: C]

CH 681L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 681 (Polymer Chemistry II). Prerequisites: Concurrent enrollment in CH 681.

CH 683. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 684. Polymer Chemistry II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry II is NOT required for these students.

CH 689. Special Topics in Polymer Chemistry. 3 Hours.

Detailed consideration of areas of special interests in polymer chemistry.

Prerequisites: CH 580 [Min Grade: C] and CH 581 [Min Grade: C]

CH 691. Seminar. 1 Hour.

Seminars on current topics in chemical research.

CH 692. Seminar Presentation. 2 Hours.

Seminar given by graduate students on current topics in chemical research.

CH 698. Graduate Research. 1-12 Hour.

Prerequisite: Permission of graduate faculty member. Research hours.

CH 699. Thesis Research. 1-12 Hour.

Prerequisites: Admission to candidacy and permission of graduate faculty member. Must have approved 3 member committee and approved candidacy by the graduate dean before registering for 699.

Prerequisites: GAC M

CH 700. Foundations Of Physical and Analytical Chemistry. 3 Hours.

Molecular thermodynamics and molecular reaction dynamics, chemical equilibrium and solubility in aqueous/organic solutions, and ligand binding to macromolecules in aqueous solution. Fall. 999999.

CH 701. Foundations of Organic and Inorganic Chemistry. 3 Hours.

Organic Bonding and structure, concerted pericyclic reactions, stereochemistry, effects of conformation, sterics and electronics on reactivity; and the study of reaction mechanisms with emphasis on nucleophilic substitution. Inorganic Bonding and structure including basic molecular orbital theory, the solid state, Lewis acid-base chemistry, coordination chemistry, reaction mechanisms for transition metal complexes and characterization of transition metal complexes.

CH 702. Principles of Chemical Instruction. 1 Hour.

Responsibilities of laboratory instructors, safety regulations, grading, teaching styles and formats, and instructional objectives. Prerequisite: Permission of instructor. Fall.

CH 710. Laboratory Experiences in Chemistry I. 3 Hours.

Application of simple experiments to high school science programs.

CH 711. Laboratory Experiences in Chemistry II. 3 Hours.

Application of simple experiments to high school science programs. Continuation of CH 710.

Prerequisites: CH 710 [Min Grade: C]

CH 712. Polymer Chemistry for Teachers. 3 Hours.

Lecture and laboratory experiences focusing on natural and synthetic polymers. Morning lectures by polymer chemists with afternoon labs where polymers are synthesized and studied. Emphasis is on practical application and new developments in polymer chemistry. Experiments are suitable for high school science programs.

CH 713. Introductory Organic Chemistry for Teachers. 3 Hours.

A laboratory, lecture, demonstration course on the nature of carbon compounds including hydrocarbons, functional groups and their reactions. Emphasis given to laboratory experiments and demonstrations suitable for high school students.

CH 714. Introductory Biochemistry for Teachers I. 3 Hours.

Lecture series covering carbohydrates, lipids, and proteins. Emphasis given to practical applications and relationship between chemistry and biology. Aspects of nutrition are discussed.

CH 715. Introductory Biochemistry for Teachers II. 3 Hours.

Lecture series covering vitamins, minerals, enzymes, biochemical energy and metabolism. Strong connections between chemistry and biology. Practical applications are emphasized.

CH 716. Chemical Demonstrations I. 3 Hours.

A laboratory-based course exploring the teaching potential of selected chemical reactions. Teachers perform at least 50 demonstrations in the laboratory and share ways they can use these in their own classes. Emphasis on facilitating learning of chemistry.

CH 717. Chemical Demonstrations II. 3 Hours.

At least 50 demonstrations will be performed. Focus is on safe, practical and effective experiments suitable for high school students.

CH 719. Special Topics in Chemical Education. 2-3 Hours.

Topics determined by interest of students and faculty.

CH 725. Molecular Structure and Spectroscopy. 3 Hours.

Classical and quantum mechanical descriptions of molecular structure and bonding. Basic principles and techniques of molecular spectroscopic methods. Exercises and experiments with computational software and spectroscopic instrumentation will be conducted.

CH 729. Special Topics in Physical Chemistry. 3 Hours.

Topics determined by mutual student-faculty interest. Typical are computational chemistry, molecular spectroscopy, nuclear magnetic resonance.

Prerequisites: CH 700 [Min Grade: C]

CH 730. Physical Organic Chemistry. 3 Hours.

Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

CH 731. Organic Reaction and Their Mechanisms. 3 Hours.

Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Spring.

CH 732. Organic Reaction and Synthesis. 3 Hours.

Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Spring.

Prerequisites: CH 731 [Min Grade: C]

CH 733. Reactive Intermediates and Conservation of Bonding. 3 Hours.

Behavior of organic molecules in static and reactive situations. Spring.

Prerequisites: CH 731 [Min Grade: C]

CH 739. Special Topics in Organic Chemistry. 3 Hours.

Topics determined by interest of students and faculty.

CH 740. Bonding and Structure in Inorganic Compounds. 3 Hours.

Advanced treatment of bonding in main group and transition metal compounds, and a study of its relationship to the properties of compounds. Spring.

Prerequisites: CH 540 [Min Grade: C]

CH 742. Organometallic Chemistry and Catalysis. 3 Hours.

Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Summer (alternate years).

Prerequisites: CH 640 [Min Grade: C] or CH 740 [Min Grade: C]

CH 749. Special Topics in Inorganic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

CH 750. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. The course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

CH 751. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. This course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

CH 759. Special Topics in Analytical Chemistry. 3 Hours.

Introduction to thermally initiated physical and chemical processes in the condensed phase systems such as liquids, crystalline solids, and glasses (amorphous solids). The course covers the use of calorimetry, thermogravimetry, and thermomechanical methods for exploring thermodynamics and kinetics of crystallization, glass transition, solid-solid and helix-coil transitions, decomposition, polymerization, etc.

CH 760. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 761. Biochemistry II. 3 Hours.

Biochemistry II: Structure and function of proteins, membranes, membrane proteins, and nucleic acids. Ligand binding and enzyme kinetics. Molecular genetics (replication, transcription, translation) and the control of gene expression and protein synthesis.

CH 763. Biochemistry Laboratory. 3 Hours.

Introduction to modern analytical techniques used for the isolation and characterization of biological macromolecules.

CH 764. Biophysical Chemistry. 3 Hours.

Common physical methods for understanding the structure and stability of macromolecules that include several spectroscopic, thermodynamic, and computational methods. Underlying physical principle described, instrumentation discussed, and examples cited from the literature. Spring.

Prerequisites: CH 325 [Min Grade: C]

CH 769. Special Topics in Biochemistry. 1-3 Hour.

Detailed consideration of areas of special interest.

Prerequisites: CH 462 [Min Grade: C]

CH 770. Chemical Literature. 3 Hours.

Use of on-line literature and development of searching techniques.

CH 771. Medicinal Chemistry and Drug Discovery. 3 Hours.

Description. Emphasis on design strategies for small organic drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented. Prerequisites include undergraduate organic chemistry (CH235 and CH237) and undergraduate biochemistry (CH461) or eq.

CH 772. Chemistry of Natural Products. 3 Hours.

The principal focus of this course will be the introduction of synthesis and medicinal chemistry of natural products. Drugs discovery using natural products, with specific examples in the areas of antibacterials, anticancer, and analgesic drugs will be introduced. An overview of structural classes, biosynthetic pathways and application of asymmetric synthesis in the synthesis of specific examples from each class will be discussed. This course is intended for undergraduate students at the senior level.

CH 773. Electron Pushing and Total Synthesis. 3 Hours.

The advanced organic course is aimed to enhance students' comprehension of advanced organic chemistry theory and principles, and apply them to understand reaction mechanisms and tactic of total synthesis. It will cover different types of common organic reactions each week, for example, reactions involving anion intermediates, cation intermediates, rearrangement, photochemical process, carbonyl compounds, and other reactive intermediates. Using electron pushing for mechanistic reasoning will be emphasized.

CH 774. X-Ray Crystallography. 3 Hours.

Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 780. Polymer Chemistry I. 4 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 780L.

CH 780L. Polymer Chemistry I Laboratory. 0 Hours.

Polymer Chemistry I Laboratory required with CH 780 lecture.

CH 781. Polymer Chemistry II. 4 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 781L.

Prerequisites: CH 780 [Min Grade: C]

CH 781L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 781 (Polymer Chemistry II). Prerequisites: Concurrent enrollment in CH 781.

CH 783. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 784. Chemistry of Polymers and Polymeric Materials II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry II is NOT required for these students.

CH 789. Special Topics in Polymer Chemistry. 3 Hours.

Detailed consideration of areas of special interests in polymer chemistry.

Prerequisites: CH 580 [Min Grade: C] and CH 581 [Min Grade: C]

CH 790. Introduction to Graduate Research. 1 Hour.

The purpose of this course is to acquaint incoming graduate student with departmental, school and university policies and procedures for conducting research and teaching undergraduate students. Pass/Fail.

CH 791. Seminar. 1 Hour.

Seminars on current topics in chemical research.

CH 792. Seminar Presentation. 2 Hours.

Seminar given by graduate students on current topics in chemical research.

CH 798. Non-Dissertation Research. 1-12 Hour.

Prerequisite: Permission of graduate faculty member.

CH 799. Dissertation Research. 1-12 Hour.

Prerequisite: Admission to candidacy and permission of graduate faculty member. Must have graduate dean's approval of 5 member committee. Must have IRB and graduate dean's approval of candidacy. Need at least 2 semesters of candidacy to graduate.

Prerequisites: GAC D

CHI-Chinese Courses**CLS-Clinical Laboratory Sci Courses****CLS 500. Health and Safety Management. 1 Hour.**

Review of infection control principles focused on bloodborne, airborne, drug-resistant and opportunistic pathogens, and general health and safety guidelines and standards.

CLS 503. Body Fluids. 1 Hour.

Diagnosis and monitoring of renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis.

CLS 504. Lab Analysis of Body Fluids. 1 Hour.

Application of diagnosis and monitoring of renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis.

CLS 505. Laboratory Management. 3 Hours.

Roles and functions of clinical laboratories and practitioners; professionalism and ethics; educational methodology and training; professional and interpersonal communication; behavioral aspects of management; leadership styles and management theory; team-building; legal issues related to employment; recruitment, interview and selection of personnel; organizational culture and behavioral change; laboratory operations; safety, governmental regulations, standards and compliance; marketing, outreach, and business plan; budget, cost analysis, reimbursement; critical pathways, decision-making, test utilization; performance improvement, quality assessment; risk management, evidence-based laboratory medicine.

CLS 506. Laboratory Techniques. 2 Hours.

Overview of issues and skills surrounding working in the modern laboratory environment; includes safety, collection of specimens, equipment, mathematics, measurements, microscopy, dilutions, quality assurance, basic spectrophotometry, phlebotomy, automation of laboratory testing and lab computers.

CLS 512. Clinical Laboratory Operations. 2 Hours.

Study of operations management practices for clinical laboratories to include the operations of the total testing process: performance management and competency-based management, information management, emerging service sites for diagnostic assay services, services marketing, voluntary and regulatory compliance standards, test utilization and critical pathways applications focused on outcomes and patient safety and emerging IVD technologies.

Prerequisites: CLS 595 [Min Grade: C](Can be taken Concurrently)

CLS 518. Immunology. 4 Hours.

Physiology of immune responses to infectious agents, tumors, transplant; abnormal responses: hypersensitivity, autoimmunity, immunoproliferative disorders, and immunodeficiencies; antigen-antibody reaction; complement; application of immunologic tests.

CLS 523. Clinical Microbiology. 3 Hours.

Reservoirs, modes of transmission, disease associations, and morphological and biochemical characteristics of microorganisms commonly isolated in the clinical laboratory; methods used to isolate and identify bacteria, parasites, and fungi.

CLS 524. Clinical Microbiology Laboratory. 1 Hour.

Performance of techniques and tests used in the isolation and identification of bacteria, fungi, and parasites commonly seen in a clinical microbiology laboratory.

CLS 526. Instrumentation & Automation. 2 Hours.

Study of the theory and principles of automation and instrumentation used in laboratories emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

CLS 527. Instrumentation and Automation Laboratory. 1 Hour.

Practical application of automation and instrumentation used in laboratories. Emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

CLS 528. Hematology I. 4 Hours.

Systematic examination of blood cells: normal function; recognizing their microscopic appearance; blood cell disorders; standard and special clinical hematology laboratory procedures; validation of laboratory data; interpretation of results, and quality assurance.

Prerequisites: CLS 500 [Min Grade: C]

CLS 530. Immunoematology. 4 Hours.

Immunogenetics, serological characteristics, and clinical significance of blood group systems; antibody identification; pretransfusion testing and problem-solving; donor blood collection; component preparation; transfusion and cellular therapy; investigation and treatment of immune hemolytic disorders.

CLS 531. Immunoematology Laboratory. 1 Hour.

Red cell phenotyping, antibody detection and identification, pretransfusion testing, and laboratory investigation to diagnosis and treat hemolytic anemias.

CLS 532. Hematology II. 4 Hours.

Structure and function of hematopoietic and lymphatic tissue. Stem cell differentiation, hematopoiesis, erythrocyte and leukocyte kinetics. Laboratory diagnosis and case management of anemia, lymphoma, myeloma, acute and chronic cell morphology, cell population scatter plots and histograms, cytochemistry, immunophenotyping, molecular methods, and cytogenetics. Hematology laboratory problem solving.

Prerequisites: CLS 528 [Min Grade: C]

CLS 538. Infectious Diseases. 3 Hours.

Pathogenic mechanisms of infectious diseases; normal flora and pathogens of various body sites; methods for collection, transport, and culturing different types of clinical specimens; interpretation of cultures.

Prerequisites: CLS 523 [Min Grade: C]

CLS 539. Infectious Diseases Laboratory. 1 Hour.

Performance and interpretation of direct Gram stains; culturing various types of clinical specimens for isolation of bacteria; performing and interpreting tests used in the identification of potential pathogens; reporting culture results; antimicrobial susceptibility and resistance testing.

Prerequisites: CLS 524 [Min Grade: C]

CLS 542. Molecular Diagnostics. 3 Hours.

Study of molecular biochemistry, medical genetics, molecular pathophysiology, and the theory of molecular tests.

CLS 543. Molecular Diagnostics Lab. 1 Hour.

Practical application of the isolation of nucleic acids, analysis of nucleic acids and protein, cytogenetics, and the interpretation of various molecular methods.

CLS 551. Clinical Chemistry. 4 Hours.

Theory of clinical laboratory techniques to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

CLS 552. Clinical Chemistry Laboratory. 1 Hour.

Performance of laboratory techniques used to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

CLS 560. Clinical Correlations. 3 Hours.

Correlate clinical, technical and analytical proficiencies that comprise clinical laboratory science practice. Analyze and interpret case studies through selection, application, and interpretation of clinical laboratory protocols.

Prerequisites: CLS 530 [Min Grade: C] and CLS 532 [Min Grade: C] (Can be taken Concurrently) and CLS 538 [Min Grade: C] and CLS 551 [Min Grade: C]

CLS 570. Professional Development. 1 Hour.

Review of medical technology/ clinical laboratory science body of knowledge with required comprehensive trial certification final examination using self-directed online materials. Experience with the development of a personal certification maintenance plan to meet requirements defined by national certification agencies in Clinical Laboratory Sciences.

CLS 595. Clinical Practice. 1-12 Hour.

Directed clinical practice in immunohematology laboratory procedures and methods, problem-solving, quality assurance, preventive maintenance, and safety.

CLS 660. Molecular Biotechnology. 3 Hours.

Study of the basic science of DNA and RNA, including their chemistries, structures and syntheses; repair; genes, operons, genomes and gene expression; RNA processing and modification; DNA methods and applications; and RNA methods and applications.

CLS 686. Special Topics in Clinical Laboratory Sciences. 1-4 Hour.

Selected advanced topics of current scientific, clinical, and professional importance; specific topics designed to meet student need and interest.

CLS 698. Master's Level Non-Thesis Research. 1-6 Hour.**CLS 699. Thesis Research. 1-6 Hour.**

Implementation of research. Must be admitted to master level candidacy. Must have approval IRB. Must have a 3 member committee approved by the graduate dean.

Prerequisites: GAC M

CM-Communication Management Courses

CM 601. Foundations of Communication Management. 3 Hours.

Development of communication models, relationships between models and research, examination of functions of models and their impact on human communication in various media. 999999.

CM 602. Source Credibility. 3 Hours.

Theories of ethos, dynamics of credibility in public speaking, organizational, interpersonal, print and broadcasting contexts. Measures of credibility and methods for constructing credibility.

CM 603. Message Construction. 3 Hours.

Features of communication messages, including audience, situation, and culture and their impact on message construction. The principles underlying the creation of messages in various media.

CM 604. Analysis of Communication Audiences. 3 Hours.

Analysis of the audience and its place in the communication model. Includes needs and gratification from various media as well as how messages and feedback are interpreted.

CM 605. Communication Effects. 3 Hours.

Effects of Communication, especially through mass media, as a result of messages transmitted. Topics include violence, persuasion, and sexuality.

CM 607. Seminar in Applied Communication Research. 3 Hours.

Topics include interpersonal communication, small group communication, organizational communication, and political communication.

CM 609. Communibiology. 3 Hours.

Communication personality traits will be the primary focus of this course. This course is for graduate students only.

Prerequisites: CM 601 [Min Grade: B]

CM 610. Instructional Communication. 3 Hours.

The instructional class makes theory and research accessible to students who want to learn more about teaching, communication, and learning.

CM 611. Seminar in Org Communication. 3 Hours.**CM 612. Instructional Communication. 3 Hours.**

Communication problems in the classroom. Definition of sign and sign process. Signs in communicative action.

CM 613. Nonverbal Communication. 3 Hours.

Elements of nonverbal behavior (physical appearance, gestures, space, voice) which affect communication in person-to-person situations.

CM 614. Seminar: Political Communication. 3 Hours.**CM 615. Intercultural Communication. 3 Hours.****CM 616. Health and Med Communication. 3 Hours.****CM 617. Training and Development in Communication. 3 Hours.**

Training and Development in Communication focuses on contemporary communication knowledge and skills that every trainer should have. The class will include topics such as: Adult Learners, Designing Curricula, Training Content, Methods, Plans, Sessions, Assessment, and Career Opportunities.

CM 618. Communications Independent Study. 1-3 Hour.**CM 619. Communication and the Law. 3 Hours.**

Communication and the Law focuses on general effects communication has in the law environment. Conflict, leadership, and use of the law will be considered.

CM 675. Graduate Internship. 3 Hours.

Professional experience in communication management.

CM 691. Seminar in Communication Models. 3 Hours.

Synthesis of courses on the Shannon-Weaver model of communication, with contemporary adaptations. Students should learn to carefully critique reviews of literature, research questions and hypotheses posed by others.

CM 694. Quantitative Communication Research. 3 Hours.

The study of communication theory from a quantitative perspective. Data gathering, experimental and quasi-experimental design, field research and data analysis in applied contexts to be probed.

CM 696. Qualitative Communication Research. 3 Hours.

Study of communication theory from a qualitative perspective. Historical/critical, participant-observation, and various data gathering methods and models explored from a theoretical and practical point of view.

CM 698. Master's Applied Project. 3-6 Hours.

Master's Applied Project.

CM 699. Thesis Research. 3 Hours.

Thesis Research.

Prerequisites: GAC M

CMST-Communication Studies Courses**CMST 514. Language and Thought. 3 Hours.**

Semiotics and communication. Definition of sign and sign process. Cognitive processes and communication processes. Signs in communicative action.

CMST 555. Seminar in Political Communication. 3 Hours.

Emerging cross-disciplinary field of political communication. Literature and propositions surrounding key approaches, methods, and substantive areas of inquiry in political communication.

CMST 592. Independent Studies. 1-3 Hour.

Topics of mutual interest to student and faculty member.

CMST 594. Communication Research Methods. 3 Hours.

Emphasis on research questions, design, methodology, data gathering, and analysis. Practice in conducting, interpreting, and communicating research findings to public.

COP-Co-Operative Work Prog Courses**CS-Computer Science Courses****CS 501. Programming Languages. 3 Hours.**

Formal syntax and semantics; compilers and interpreters; virtual machines; representation of data types; sequences and data control; type checking; run-time storage management; functional, logic, and object-oriented programming paradigms; concurrency and multi-threading.

CS 510. Database Management Systems. 3 Hours.

Relational model of databases, structured query language, normalized structure of database management systems based on relational model, and security and integrity of databases.

CS 514. Digital Documents, Security & Intellectual Property. 3 Hours.

To investigate and research various topics in information security that apply to intellectual property and digital documents. This is a required course for the Master of Science in Computer Forensics and Security Management. This course is not available for credit to students pursuing the MS and PhD Degree in Computer and Information Sciences.

CS 516. Practical Overview of Computer Security (POCS). 3 Hours.

Overview of the information required to obtain an ISC2 security certification with focus on the 10 domains of the CISSP examination (which are representative of what every practicing computer security professional must know). Provides students with a breadth-oriented review of Computer Security practice. This is a required course for the Master of Science in Computer Forensics and Security Management. This course is not available for credit to students pursuing the MS and PhD Degree in Computer and Information Sciences.

CS 517. Investigating Online Crime. 3 Hours.

This is the "Network Forensics" class. In this class the focus is on the use of Open Source Intelligence and Network-based data to analyze and investigate crime. Students work in a hands-on environment looking at phishing, malware, hacking, and cyber-espionage cases, but also using Open Source Intelligence techniques to analyze traditional crimes with online evidence. Tools used in the course include "i2 Analysts Notebook" and the open-source intelligence tool, Maltego from Paterva. This course is not available for credit to students pursuing the MS and PhD Degree in Computer and Information Sciences.

CS 520. Software Engineering. 3 Hours.

Design and implementation of large-scale software systems, software development life cycle, software requirements and specifications, software design and implementation, verification and validation, project management and team-oriented software development.

CS 533. Operating Systems. 3 Hours.

Internal design and operation of a modern operating system, including interrupt handling, process scheduling, memory management, virtual memory, demand paging, file space allocation, file and directory management, file/user security and file access methods. Computer Networks.

CS 534. Internetworking with TCP/IP. 3 Hours.

Underlying network technology. Interconnecting networks using bridges and routers. IP addresses and datagram formats. Static and dynamic routing algorithms. Control messages. Subnet and supernet extensions. UDP and TCP. File transfer protocols. E-mail and the World Wide Web. Network address translation and firewalls. Mandatory weekly Linux-based lab.

CS 534L. Internetworking and Intranets laboratory. 0 Hours.

Project oriented hands-on approach.

CS 535. Network Programming. 3 Hours.

Remote procedure call and client-server mechanisms. Protocol definition and compilation; client and server stubs, application code; transport independence; multiple client and server systems. Applications, e.g., remote database query and update, image filtering and archiving; systems programming, and file systems contexts.

CS 536. Computer Network Security. 3 Hours.

Conventional and public-key cryptography. Message encryption and authentication. Secure communication between computers in a hostile environment, including E-mail (PGP), virtual private networks (IPSec) and the World Wide Web (SSL). Firewalls. Mandatory weekly linux-based lab.

CS 536L. Computer Network Security Laboratory. 0 Hours.

Project oriented hands-on approach.

CS 537. Cybercrime & Forensics. 3 Hours.

Overview of all aspects of media forensics including analysis of character encoding, file formats, and digital media, examination of disk acquisition and duplication techniques in criminal investigation scenarios.

CS 550. Automata and Formal Language Theory. 3 Hours.

Finite-state automata and regular expressions, context-free grammars and pushdown automata, turing machines, computability and decidability, and complexity classes.

CS 555. Probability & Statistics in CS. 3 Hours.

Introduction to Probability and Statistics with applications in Computer Science. Counting, permutations and combinations. Probability, conditional probability, Bayes Theorem. Standard probability distributions. Measures of central tendency and dispersion. Central Limit Theorem. Regression and correlation. Hypothesis testing. Random number generation. Random algorithms. Estimating probabilities by simulation. Genetic algorithms.

CS 591. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 592. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 593. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 594. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 595. Special Topics. 3 Hours.**CS 597. Competitive Programming Techniques. 1 Hour.**

This course will help students to be more competitive in the ACM programming contest by exploring numerous problem solving techniques and algorithms not covered in the traditional curriculum.

CS 598. Practical Work Experience. 1,3 Hour.

Credit for working in the Computer Science field. Does not count toward M.S. degree.

CS 600. Formal Semantics of Programming Languages. 3 Hours.

Context-sensitive and semantic aspects of programming languages, denotational semantics, mathematical foundations.

CS 601. Program Verification. 3 Hours.

Proving properties of programs, termination and correctness, computability and decidability, role of formal methods in software design.

CS 602. Compiler Design I. 3 Hours.

Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation.

Prerequisites: CS 505 [Min Grade: B]

CS 603. Compiler Design II. 3 Hours.

Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation.

Prerequisites: CS 602 [Min Grade: B]

CS 608. Programming Languages Seminar. 1 Hour.

Seminar on Programming Languages.

CS 610. Database Systems I. 3 Hours.

This course offers an introduction to the advanced topics of database management systems. The following topics are addressed: System and file structure, efficient data manipulation using indexing and hashing, query processing, crash recovery, concurrency control, transaction processing, database security and integrity, distributed databases.

Prerequisites: CS 510 [Min Grade: B]

CS 611. Database Systems II. 3 Hours.

Relational, hierarchical, and network models; object-oriented databases, knowledge-based systems; security issues, concurrency control and distributed databases, query optimization; advanced topics.

Prerequisites: CS 610 [Min Grade: B]

CS 612. Knowledge-Based Systems. 3 Hours.

Logic model for deductive databases, top-down and bottom-up evaluation, conjunctive and disjunctive queries, recursion, query optimization, universal relation model.

Prerequisites: CS 610 [Min Grade: B]

CS 613. Object-Oriented Database Systems. 3 Hours.

Object data model, object-oriented query languages and database architecture, schema evolution, integration with non-object-oriented models, query optimization.

Prerequisites: CS 610 [Min Grade: B]

CS 614. Distributed Database Systems. 3 Hours.

Distributed DBMS architecture, query decomposition and data localization, distributed query optimization, transaction management, concurrency control, multidatabase systems.

Prerequisites: CS 610 [Min Grade: B]

CS 615. Multimedia Databases. 3 Hours.

This course introduces the principles of multimedia databases including multimedia information processing, modeling, and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia data retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval. The students should also have the expertise and competence to design and implement retrieval software for multimedia data.

Prerequisites: CS 510 [Min Grade: C]

CS 618. Database System Seminar. 1 Hour.

Seminar on Database Systems.

CS 620. Advanced Software Engineering. 3 Hours.

Advanced topics in software design, including: Software modularization, design patterns, formal methods, and software testing.

Prerequisites: CS 520 [Min Grade: B]

CS 622. Reflective and Adaptive Systems. 3 Hours.

This course examines the principles of compile-time and run-time adaptation in several contexts, including: reflection, metaprogramming, aspect-oriented software development, and metamodeling (applied to model-driven engineering).

CS 624. Formal Specification of Software Systems. 3 Hours.

Formal methods for software requirements specification, including VDM, Z, and object-oriented extensions; the relationship among formal requirements, design, and implementation.

Prerequisites: CS 505 [Min Grade: B]

CS 625. Metrics and Performance. 3 Hours.

Computer Systems addressed in this course primarily are web based systems and capacity planning is a principal theme. However, the queueing theory and statistical analysis approaches are applicable to conventional computing systems and, in fact, modeling of these latter constitute relevant background information that is developed and exploited for web systems analysis. 999999.

CS 628. Software Engineering Seminar. 1 Hour.

This is a special topics class that meets once a week to study new research ideas emerging in the area of software engineering.

CS 629. Software Engineering Research Project. 1-3 Hour.

This is a project-based experimental research course affiliated with the Masters Specialization in Software Engineering. Can only be taken as part of a specialization in Software Engineering.

CS 630. Computer Systems. 3 Hours.

Introduction to computer architecture, including memory subsystems, direct-mapped and set-associative cache and multi-level cache subsystems, direct-access devices including RAID and SCSI disk drives, processor pipelining including super-scalar and vector machines, parallel architectures including SMP, NUMA and distributed memory systems, Interrupt mechanisms, and future microprocessor design issues.

CS 631. Distributed Computing. 3 Hours.

Object-oriented distributed systems design, distributed software architecture, data and resource access, communication, client-server computing, web technologies, enterprise technologies.

CS 632. Parallel Computing. 3 Hours.

Overview of parallel computing hardware, architectures, & programming paradigms; parallel programming using MPI, Pthreads, and OpenMP; design, development, and analysis of parallel algorithms for matrix computations, FFTs, and Sorting.

CS 633. Grid Computing. 3 Hours.

Motivation for developing and using Grid Computing, the evolution of Grid Computing, and relationship between Grid Computing and other types of computing such as Cluster Computing, Distributed Computing, Internet Computing, and Peer-to-Peer Computing. Study technologies and architectures used to develop Grids.

CS 634. Virtualization. 3 Hours.

Theory and practice of virtualization. Origins, history, technical and economic motivations. Relationship to network operating systems and operating system architecture. Simulation, Emulation, Virtualization of CPUs, networks, storage, desktops, memory, devices, and combinations thereof. Different approaches to virtualization, including hardware assisted and software-only techniques. Techniques, approaches, and methodologies for scale-out and scale-up computing, including security, performance and economic concerns.

CS 636. Computer Security. 3 Hours.

Study of computer security including assurance, authorization, authentication, key distribution, encryption, threats including phishing and key logging, and related distributed computing issues. Theory and practical applications. 999999.

CS 638. Computer Systems Seminar. 1 Hour.

Lectures & discussion on advanced topics in Computer Systems.

CS 638A. Computer Systems Seminar. 1 Hour.

Lectures & discussion on advanced topics in Computer Systems.

CS 638B. Computer Systems Seminar. 1 Hour.

Lectures & discussion on advanced topics in Computer Systems.

CS 639. Distributed Computing Research Project. 1-3 Hour.

Project based course using distributed parallel computing techniques. Can only be taken as part of a specialization in Distributed Computing.

CS 640. Bioinformatics I. 3 Hours.

Introduction to computational methodologies in bioinformatics.

CS 641. Bioinformatics II. 3 Hours.

Introduction to computational methodologies in bioinformatics.

Prerequisites: CS 640 [Min Grade: B]

CS 643. Cloud Security. 3 Hours.

This course focuses on the security and privacy issues in Cloud Computing systems. While the cloud computing paradigm gains more popularity, there are many unresolved issues related to confidentiality, integrity, and availability of data and computations involving a cloud. In this course, we examine cloud computing models, look into the threat model and security issues related to data and computation outsourcing, and explore practical applications of secure cloud computing.

CS 647. Biomedical Modeling. 3 Hours.

Modeling from biomedical datasets. Acquisition, segmentation; registration and fusion; construction of shape models; measurement; illustration modeling techniques for surgical planning.

CS 648. Bioinformatics Seminar. 1 Hour.

Lectures & discussion on topics in Bioinformatics.

CS 649. Bioinformatics Research Project. 1-3 Hour.

Can only be taken as part of a specialization in Bioinformatics.

CS 650. Automata Languages and Computation. 3 Hours.

Formal grammars and automata, Turing machines, computability and decidability, computational complexity, intractability.

Prerequisites: CS 550 [Min Grade: B]

CS 651. Formal Language Theory. 3 Hours.

Parsing and translation theory, formal syntax, proof properties and complexity measures.

CS 652. Design & Analysis Algorithms. 3 Hours.

Algorithms for bioinformatics applications, especially string matching algorithms. Also, traditional algorithmic techniques, such as greedy algorithms, dynamic programming, and branch and bound.

CS 653. Computational Geometry. 3 Hours.

Basic methods and data structures, geometric searching, convex hulls, proximity, intersections.

CS 658. Theoretical Foundations Seminar. 1 Hour.

Lectures & discussion on topics in Theoretical Foundations.

CS 660. Principles in Artificial Intelligence. 3 Hours.

Programming methodologies, logic foundations, natural language applications, expert systems.

CS 661. Expert Systems. 3 Hours.

Concepts and architectures, tools, reasoning, evaluations, selected examples.

CS 662. Natural Language Processing. 3 Hours.

Syntax, semantics, ATNs, logic grammars, language and memory.

CS 663. Knowledge Discovery and Data Mining. 3 Hours.

Techniques used in data mining (such as frequent sets and association rules, decision trees, Bayesian networks, classification, clustering), algorithms underlying these techniques, and applications.

CS 664. Knowledge Representation. 3 Hours.

Logic, production systems, semantic nets, frames, multiple representational systems.

CS 665. Neural Networks. 3 Hours.

Theoretical foundations, associative memory, pattern processing, biological neural nets.

CS 666. Games & Puzzles Seminar. 1 Hour.

Interfaces and Engines for games and puzzles such as Chess, Checkers, Othello, Rubik's Cube, Go, Sudoku, etc.

CS 667. Machine Learning. 3 Hours.

Introduction to machine learning, the design of algorithms that can make predictions about the future based on past experience. Emphasizes practical considerations for developing efficient and accurate machine learning models, and theoretical underpinnings of different learning algorithms.

Prerequisites: CS 660 [Min Grade: C]

CS 668. Artificial Intelligence Seminar. 1 Hour.

Lectures & discussion on advanced topics in Artificial Intelligence.

CS 670. Computer Graphics. 3 Hours.

Graphics architectures, geometric transforms, 3-D, object models, shading, intensity, hidden elements, color, advanced topics.

CS 671. Shape Design. 3 Hours.

This course covers various aspects of the design of mathematical descriptions of shape. These geometric models are used in computer graphics, game design, automobile and aircraft design, robotics, anatomical modeling, and many other disciplines. Building geometry from images. Bezier and B-spline curves and surfaces.

CS 672. Geometric Modeling for Computer Graphics. 3 Hours.

The formal description of a motion is necessary in computer animation for graphics, game design, robotics, and many other disciplines. This course covers various aspects of the design of motions. Typical topics include position control along Bezier curves, orientation control with quaternion splines, motion planning, motion capture, camera control, collision detection, visibility analysis.

CS 673. Computer Vision Systems. 3 Hours.

Image understanding feature extraction, domain-specific knowledge for high-level vision.

CS 674. 3D Printing. 3 Hours.

3D Printing : design, materials, and aesthetics. Students will do projects which result in unique artifacts created by 3D printing. Multi-disciplinary teams are encouraged.

CS 675. Computer Visualization. 3 Hours.

Advanced Computer Graphics techniques aimed at "Scientific Visualization" applications.

CS 676. Structure from Motion. 3 Hours.

Structure from motion extracts geometric information from a series of images of an object, either still photographs or video streams. The position of the camera may also be computed, yielding camera paths. This topic has powerful applications in many areas, including computer graphics, computer vision, photography, visualization, and video augmentation. Projective geometry, multiple view geometry, feature extraction.

CS 678. Graphics and Image Processing Seminar. 1 Hour.

Lectures & discussion on advanced topics in Graphics and Image Processing.

CS 679. Computer Graphics Research Project. 1-3 Hour.

Can only be taken as part of a specialization in Computer Graphics.

CS 680. Numerical Computing Foundations. 3 Hours.

Matrix computations, matrix analysis, solution of linear systems, nonlinear systems, spectral analysis, least squares.

CS 681. Simulation Models and Animations. 3 Hours.

Model development using popular simulation languages, e.g., Excel or OpenOffice.org Calc Spreadsheet; interfacing to an animation system such as Proof Animation or Open_GL.

CS 682. Simulation Methodology and Applications. 3 Hours.

Combined continuous and discrete simulation, simulation theory, modeling environments.

CS 688. Shape Modeling Seminar. 1 Hour.

Lectures & discussion on advanced topics in Geometric Modeling.

CS 690. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 691. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 692. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 693. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 694. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 697. Directed Readings. 1-6 Hour.

Selected readings, research and project development under direction of a faculty member. Must have permission of instructor and graduate program director.

CS 698. Master's Plan II. 1-9 Hour.

Masters student registration.

CS 699. Master's Thesis Research. 1-6 Hour.

Research for M.S. candidates writing a thesis.

Prerequisites: GAC M

CS 700. Topics in Programming Language Semantics. 2,3 Hours.

Context-sensitive and semantic aspects of programming languages, denotational semantics, mathematical foundations.

CS 701. Topics in Program Verification. 3 Hours.

Proving properties of programs, termination and correctness, computability and decidability, role of formal methods in software design.

CS 702. Topics in Compiler Design I. 3 Hours.

Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation.

CS 703. Topics in Compiler Design II. 3 Hours.

Advanced topics in compiler design.

CS 708. Programming Languages Seminar. 3 Hours.

Lectures & discussion on advanced topics in Programming Languages.

CS 710. Topics in Database Systems I. 3 Hours.

This course offers an introduction to the advanced topics of database management systems. The following topics are addressed: System and file structure, efficient data manipulation using indexing and hashing, query processing, crash recovery, concurrency control, transaction processing, database security and integrity, distributed databases.

CS 711. Topics in Database Systems II. 3 Hours.

Relational, hierarchical, and network models; object-oriented databases, knowledge-based systems; security issues, concurrency control and distributed databases, query optimization; advanced topics.

CS 712. Topics in Knowledge-Base Systems. 3 Hours.

Logic model for deductive databases, top-down and bottom-up evaluation, conjunctive and disjunctive queries, recursion, query optimization, universal relation model.

CS 713. Topics in Object-Oriented Database Systems. 3 Hours.

Object data model, object-oriented query languages and database architecture, schema evolution, integration with non-object-oriented models, query optimization.

CS 714. Topics in Distributed Database Systems. 3 Hours.

Distributed DBMS architecture, query decomposition and data localization, distributed query optimization, transaction management, concurrency control, multidatabase systems.

CS 715. Topics in Multimedia Database. 3 Hours.

This course introduces the principles of multimedia databases including multimedia information processing, modeling, and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia data retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval. The students should also have the expertise and competence to design and implement retrieval software for multimedia data.

CS 718. Database Systems Seminar. 3 Hours.

Lectures and discussion on advanced topics in Database Systems.

CS 720. Topics in Advanced Software Engineering. 3 Hours.

Advanced topics in software design, including: Software modularization, design patterns, formal methods, and software testing.

CS 722. Topics in Reflective and Adaptive Systems. 3 Hours.

This course examines the principles of compile-time and run-time adaptation in several contexts, including: reflection, metaprogramming, aspect-oriented software development, and metamodeling (applied to model-driven engineering).

CS 724. Topics in Formal Specification of Software Systems. 3 Hours.

Formal methods for software requirements specification, including VDM, Z, and object-oriented extensions; the relationship among formal requirements, design, and implementation.

CS 725. Topics in Computer System Performance Analysis. 3 Hours.

Computer Systems addressed in this course primarily are web based systems and capacity planning is a principal theme. However, the queueing theory and statistical analysis approaches are applicable to conventional computing systems and, in fact, modeling of these latter constitute relevant background information that is developed and exploited for web systems analysis.

CS 728. Software Engineering Seminar. 3 Hours.

This is a special topics class that meets once a week to study new research ideas emerging in the area of software engineering.

CS 730. Topics in Computer Systems. 3 Hours.

Introduction to computer architecture, including memory subsystems, direct-mapped and set-associative cache and multi-level cache subsystems, direct-access devices including RAID and SCSI disk drives, processor pipelining including super-scalar and vector machines, parallel architectures including SMP, NUMA and distributed memory systems, Interrupt mechanisms, and future microprocessor design issues.

CS 731. Topics in Distributed Computing. 3 Hours.

Object-oriented distributed systems design, distributed software architecture, data and resource access, communication, client-server computing, web technologies, enterprise technologies.

CS 732. Topics in Parallel Computing. 3 Hours.

Overview of parallel computing hardware, architectures, & programming paradigms; parallel programming using MPI, Pthreads, and OpenMP; design, development, and analysis of parallel algorithms for matrix computations, FFTs, and Sorting.

CS 733. Topics in Grid Computing. 3 Hours.

Motivation for developing and using Grid Computing, the evolution of Grid Computing, and relationship between Grid Computing and other types of computing such as Cluster Computing, Distributed Computing, Internet Computing, and Peer-to-Peer Computing. Study technologies and architectures used to develop Grids.

CS 734. Virtualization. 3 Hours.

Theory and practice of virtualization. Origins, history, technical and economic motivations. Relationship to network operating systems and operating system architecture. Simulation, Emulation, Virtualization of CPUs, networks, storage, desktops, memory, devices, and combinations thereof. Different approaches to virtualization, including hardware assisted and software-only techniques. Techniques, approaches, and methodologies for scale-out and scale-up computing, including security, performance and economic concerns.

CS 736. Topics in Computer Security. 3 Hours.

Study of computer security including assurance, authorization, authentication, key distribution, encryption, threats including phishing and key logging, and related distributed computing issues. Theory and practical applications.

CS 738. Computer Systems Seminar. 3 Hours.

Lectures & discussion on advanced topics in Computer Systems.

CS 738A. Computer Systems Seminar. 3 Hours.

Lectures & discussion on advanced topics in Computer Systems.

CS 738B. Computer Systems Seminar. 3 Hours.

Lectures & discussion on advanced topics in Computer Science.

CS 739. Topics Distributed Computing Res. 3 Hours.**CS 740. Topics in Bioinformatics I. 3 Hours.**

Introduction to computational methodologies in bioinformatics.

CS 741. Topics in Bioinformatics II. 3 Hours.

Introduction to computational methodologies in bioinformatics.

CS 743. Cloud Security. 3 Hours.

This course focuses on the security and privacy issues in Cloud Computing systems. While the cloud computing paradigm gains more popularity, there are many unresolved issues related to confidentiality, integrity, and availability of data and computations involving a cloud. In this course, we examine cloud computing models, look into the threat model and security issues related to data and computation outsourcing, and explore practical applications of secure cloud computing.

CS 747. Biomedical Modeling. 3 Hours.

Modeling from biomedical datasets. Acquisition, segmentation; registration and fusion; construction of shape models; measurement; illustration modeling techniques for surgical planning.

CS 748. Bioinformatics Seminar. 3 Hours.

Lectures & discussion on topics in Bioinformatics.

CS 750. Topics in Automata, Languages & Computation. 3 Hours.

Formal grammars and automata, Turing machines, computability and decidability, computational complexity, intractability.

CS 751. Topics in Formal Language Theory. 3 Hours.

Parsing and translation theory, formal syntax, proof properties and complexity measures.

CS 752. Topics in Design and Analysis of Algorithms. 3 Hours.

Algorithms for bioinformatics applications, especially string matching algorithms. Also, traditional algorithmic techniques, such as greedy algorithms, dynamic programming, and branch and bound.

CS 753. Topics in Computational Geometry. 3 Hours.

Basic methods and data structures, geometric searching, convex hulls, proximity, intersections.

CS 758. Theoretical Foundations Seminar. 3 Hours.

Lectures & discussion on topics in Theoretical Foundations.

CS 760. Topics in Artificial Intelligence. 3 Hours.

Programming methodologies, logic foundations, natural language applications, expert systems.

CS 761. Topics in Expert Systems. 3 Hours.

Concepts and architectures, tools, reasoning, evaluations, selected examples.

CS 762. Topics in Natural Language Processing. 3 Hours.

Syntax, semantics, ATNs, logic grammars, language and memory.

CS 763. Topics in Knowledge Discovery and Data Mining. 3 Hours.

Techniques used in data mining (such as frequent sets and association rules, decision trees, Bayesian networks, classification, clustering), algorithms underlying these techniques, and applications.

CS 764. Topics in Knowledge Representation. 3 Hours.

Logic, production systems, semantic nets, frames, multiple representational systems.

CS 765. Topics in Neural Networks. 3 Hours.

Theoretical foundations, associative memory, pattern processing, biological neural nets.

CS 766. Games and Puzzles Seminar. 3 Hours.

Interfaces and Engines for games and puzzles such as Chess, Checkers, Othello, Rubik's Cube, Go, Sudoku, etc.

CS 767. Machine Learning. 3 Hours.

Introduction to machine learning, the design of algorithms that can make predictions about the future based on past experience. Emphasizes practical considerations for developing efficient and accurate machine learning models, and theoretical underpinnings of different learning algorithms.

Prerequisites: CS 760 [Min Grade: C]

CS 768. Artificial Intelligence Seminar. 3 Hours.

Lectures & discussion on advanced topics in Artificial Intelligence.

CS 770. Topics in Computer Graphics. 3 Hours.

Graphics architectures, geometric transforms, 3-D, object models, shading, intensity, hidden elements, color, advanced topics.

CS 771. Topics in Computer Graphics and Modeling. 3 Hours.

This course covers various aspects of the design of mathematical descriptions of shape. These geometric models are used in computer graphics, game design, automobile and aircraft design, robotics, anatomical modeling, and many other disciplines. Building geometry from images. Bezier and B-spline curves and surfaces.

CS 772. Topics in Motion Design. 3 Hours.

The formal description of a motion is necessary in computer animation for graphics, game design, robotics, and many other disciplines. This course covers various aspects of the design of motions. Typical topics include position control along Bezier curves, orientation control with quaternion splines, motion planning, motion capture, camera control, collision detection, visibility analysis.

CS 773. Topics in Computer Vision. 3 Hours.

Image understanding feature extraction, domain-specific knowledge for high-level vision.

CS 774. 3D Printing. 3 Hours.

3D Printing : design, materials, and aesthetics. Students will do projects which result in unique artifacts created by 3D printing. Multi-disciplinary teams are encouraged.

CS 775. Topics in Computer Visualization. 3 Hours.

Advanced Computer Graphics techniques aimed at "Scientific Visualization" applications.

CS 776. TPS in Structure from Motion. 3 Hours.

Structure from motion extracts geometric information from a series of images of an object, either still photographs or video streams. The position of the camera may also be computed, yielding camera paths. This topic has powerful applications in many areas, including computer graphics, computer vision, photography, visualization, and video augmentation. Projective geometry, multiple view geometry, feature extraction.

CS 778. Graphics and Image Processing Seminar. 3 Hours.

Lectures & discussion on advanced topics in Graphics and Image Processing.

CS 780. Topics in Numerical Computing Foundations. 3 Hours.

Matrix computations and matrix analysis, including solution of linear systems, solution of nonlinear systems, spectral analysis, quadrature, and least squares.

CS 781. Topics in Simulation Models and Animations. 3 Hours.

Model development using popular simulation languages, e.g., Excel or OpenOffice.org Calc Spreadsheet; interfacing to an animation system such as Proof Animation or Open_GL.

CS 782. Topics in Simulation, Methodology and Application. 3 Hours.

Combined continuous and discrete simulation, simulation theory, modeling environments.

CS 788. Shape Modeling Seminar. 3 Hours.

Lectures & discussion on advanced topics in Geometric Modeling.

CS 790. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 791. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 792. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 793. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 794. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 796. Directed Readings and Research. 1-9 Hour.

Selected readings, research and project development under direction of a faculty member. Must have permission of instructor and graduate program director.

CS 799. Dissertation Research. 1-9 Hour.

Prerequisite: Admission to candidacy.

Prerequisites: GAC D

CT-Cytotechnology Courses

CT 694. Clinical Molecular Pathology. 2 Hours.

Molecular basis of disease processes, analysis of current assays used in the clinical laboratory, impact on patient management, and ethical considerations.

Clinic Courses

CLN 503. Adv CL Clinic Elective. 1 Hour.

Clinical Research Management Courses

CRM 670. Clinical Research Ethics, Methods and Clinical Trials. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction to historical, cultural, and ethical influences on clinical research, and introduces concepts related to good clinical practice guidelines. The course also addresses concepts of scientific integrity, scientific misconduct, the informed consent process, research methods and clinical trials.

CRM 671. Clinical Research Study Operations and Site Management. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction to principles of study and site management for the development, implementation and evaluation of clinical research, and expands concepts related to good clinical practice guidelines.

CRM 672. An Overview of Teaching Principles for Clinical Research Coordinators and Healthcare Professionals. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction and overview of teaching principles that are applicable to clinical and clinical research venues.

CRM 673. Current Issues in Clinical Research Management. 3 Hours.

This course provides students with an opportunity to expand critical learning and application of clinical research management topics through review of current literature and use of available resources.

Prerequisites: (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C]) or (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C])

CRM 674L. Practicum Experiences in Clinical Research Management. 3 Hours.

This course provides students with an opportunity to expand learning experiences that validate cognitive, affective and psychomotor skill sets of CRMs; and includes an opportunity to develop additional learning objectives and practicum experiences that will culminate in a project that fulfills learning goals.

Prerequisites: (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C] and CRM 673 [Min Grade: C]) (Can be taken Concurrently) or (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C] and CRM 673 [Min Grade: C]) (Can be taken Concurrently)

Core Curriculum Courses

DB - Distribution Courses

DB 530. Distribution Operations. 3 Hours.

Concepts of value added, profitability, inventory management, scheduling, decision support systems, facilities, and warehouse operations integrated with financial control of distributor operations. Case studies and industrial speakers.

DB 535. Distribution Policies and Quality Issues. 3 Hours.

Cases incorporating current approaches and procedures for attaining optimum manufacturer/distributor/customer relationships. Distributor go-to-market channel strategies and management, B2B ecommerce strategy and applications, and strategic account management processes and systems. Market demand analysis, profitability, sales force strategies, multi-channel selling models, and other operational strategies and technologies used by industrial distributors.

DCS-Digital Community Stud Courses

DCS 601. Ethnographic Filmmaking. 6 Hours.

This course is an interdisciplinary course in which students pair up to produce a short documentary film which represents a community in the Birmingham area. The course contains four key elements: 1) community outreach 2) introduction to social science theory and methods, 3) film theory and the aesthetics of filmmaking, and 4) technical aspects of camera work and digital video editing. Permission of Instructor.

DCS 650. Media and Public Service. 3 Hours.

This course offers students hands-on experience creating and analyzing media pieces about community issues, including documentary films, public service announcements, translation of academic research to lay audiences, and multimedia grant proposals and reports. Emphasis will be on communicating effectively in the non-profit sector.

Dentistry - Post Doctoral Courses

EC-Economics Courses

EC 520. Applied Forecasting. 3 Hours.

EC 540. Economics for Educators. 3 Hours.

Students will gain an understanding of both basic economic principles and entrepreneurship and learn innovative methods of transferring economic knowledge to elementary and secondary students. Students will also become well-versed in the National and State standards.

ECE-Early Childhood Educ Courses

ECE 545. Curriculum for Young Children: Math Science and SS. 6 Hours.

Basic knowledge of curriculum and concepts of mathematics, science, and social studies for young children. Child growth and development as basis for planning and teaching mathematics, science, and social studies to young children. Teaching methods and use of instructional media. Practicum experience required. Prerequisite: Admission to ECE 5th-Year Program.

Prerequisites: EEC 240 [Min Grade: D] and MA 113 [Min Grade: D] and MA 114 [Min Grade: D]

ECE 546. Comm Arts/Reading Young Child. 6 Hours.

Nature of reading and language arts experiences for children grades N-3. Media, materials, experiences, programs, and strategies to facilitate development of communicative abilities with emphasis on preserving and maintaining creative expression. Integration of learning in areas of listening, speaking, reading, composition, literature, handwriting, spelling, and other communication arts. Laboratory experiences required.

Prerequisites: EDR 440 [Min Grade: D]

ECE 548. Infant/Toddler Development. 3 Hours.

Study of human development within an ecological context from before birth to three years of age. Course covers social-emotional, physical, cognitive, language, and creative development of the infant and toddler in the home and also in programs for very young children.

ECE 549. Edu Environment: Inf/Todd/Par. 3-6 Hours.

Study of infant (or toddler) development as it relates to the organization of a parent/infant (or toddler) educational program. Information concerning program management, observation of parent/infant (or toddler) interaction, development and sequencing of activities, creation and evaluation of materials, and an examination of techniques and procedures for parent involvement and education. Actual experience in working with a parent/infant (or toddler) program will be an integral part of the course. Prerequisite: ECE 548 or equivalent.

Prerequisites: ECE 548 [Min Grade: C]

ECE 620. Introduction to Curriculum and Teaching. 3 Hours.

Basic knowledge of early childhood curriculum for programs, infant through third grade, in a variety of settings. Relationship of child growth and development in planning and implementation of all areas of curriculum. Prerequisite: Admission to ECE 5th-Year Program.

ECE 630. Cognitive Curriculum ECE. 3 Hours.

Mathematics and science for children four to eight years of age based on constructivism. Children's thinking, particularly in physical-knowledged activities, group games, and situations in daily living.

ECE 631. Program for Young Children. 3 Hours.

Literature for children in nursery school, kindergarten, primary grades; selection, use, and integration of literature in total curriculum.

ECE 632. Young Children and Their Literature. 3 Hours.

Literature for children in nursery school, kindergarten, primary grades; selection, use, and integration of literature in total curriculum.

ECE 633. Social Development of the Young Atypical Child. 3 Hours.

Theoretical issues and political, sociological relationship of the atypical child. Nature, assessment, and intervention of emotional disorder. Program planning, teaching, and interdisciplinary considerations.

ECE 690. Practicum in Early Childhood Education. 3-6 Hours.

Required of all M.A.Ed. students. Prerequisite: Permission of instructor.

ECE 691. Practicum Supervision in ECE. 2 Hours.

Supervision of practicum students.

ECE 692. Practicum in Primary Education. 6-9 Hours.

Prerequisite: Permission of advisor and department.

ECE 693. Internship in Early Childhood Education. 3-9 Hours.

Full-time internship for 10 weeks (300 clock hours).

ECE 694. Practicum in ECE for the Young Atypical Child. 3 Hours.**ECE 730. Doctoral Seminar I: Issues in Development Theory. 3 Hours.**

Prerequisites: Admission to doctoral program or instructor permission. Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule.

ECE 731. Doctoral Seminar II: Children and Society. 3 Hours.

Prerequisites: Admission to doctoral program or instructor permission. Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule.

ECE 732. Dr Sem III: ECE Dev Studies. 1-3 Hour.

Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule.

Prerequisites: ECE 730 [Min Grade: C] and ECE 731 [Min Grade: C]

ECE 733. Doctoral Seminar IV: Adv Research Design in ECE. 3 Hours.

Evaluation and planning of research in preparation for dissertation. Prerequisite: At least one course in research, measurement, or statistics.

ECE 734. Logic and Scientific Inquiry. 3 Hours.

Scientific investigation as applied in education. Conceptual issues in research process. Methods of analysis and presentation. Prerequisite: Master's degree.

ECE 735. Meaning and Development of Play. 3 Hours.

Nature of play, its importance and how it is nurtured.

ECE 736. Personality Development of the Young Child. 3 Hours.

Theoretical perspectives; review of research, including cross-cultural studies.

ECE 737. Parent Child and School Interface. 3 Hours.

Historical development of parent involvement. Theoretical bases of family-school interactions.

ECE 738. The Consultation Process and the Young Child. 3 Hours.

Skills for working with families, teachers, and professionals in community agencies that serve infants, toddlers, and young children.

ECE 739. Developing Interpersonal Competence for Leaders. 3 Hours.

Relationships with coworkers and subordinates. Various approaches to interpersonal relationships.

ECE 740. Research Apprenticeship. 3-6 Hours.

Planning, implementation, analysis, and presentation of research.

ECE 741. Research Study: Design and Implementation. 3 Hours.

Development of rationale, literature search, collection and analysis of data, and formal written report (according to APA guidelines). Must be completed before admission to candidacy.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 609 [Min Grade: C] and ECE 740 [Min Grade: C]

ECE 742. Piaget: Theory and Research I. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge. Prerequisite: Master's degree and EEC 672.

Prerequisites: EEC 672 [Min Grade: C]

ECE 743. Piaget: Theory and Research II. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge. Prerequisite: Master's degree and EEC 672.

Prerequisites: EEC 672 [Min Grade: C]

ECE 744. Piaget: Theory and Research III. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge. Prerequisite: Master's degree and EEC 672.

Prerequisites: ECE 743 [Min Grade: C] and ECE 672 [Min Grade: C]

ECE 745. Piaget: Theory and Research IV. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge. Prerequisite: Master's degree and EEC 672.

Prerequisites: ECE 744 [Min Grade: C] and ECE 672 [Min Grade: C]

ECE 746. Contemporary Issues in Science Education. 3 Hours.

Crisis atmosphere surrounding science education in American classroom.

Prerequisites: ECE 730 [Min Grade: C] and ECE 731 [Min Grade: C] and ECE 732 [Min Grade: C]

ECE 747. Social Development of Young Children. 3 Hours.

Factors influencing socialization of young children.

Prerequisites: ECE 730 [Min Grade: C] and ECE 732 [Min Grade: C]

ECE 748. Research in Infancy. 3 Hours.

Theoretical and empirical evidence relating to psychomotor domain.

ECE 749. Advanced Early Childhood Curriculum. 3 Hours.

Historical, philosophical, psychological, and social thought influencing curriculum in early childhood education.

ECE 750. Literacy Before School. 3 Hours.

Written language development of preschool children.

ECE 751. School and Literacy Instruction. 3 Hours.

Primary-level literacy instruction and children's literacy development.

Prerequisites: Admission to doctoral program in early childhood education and two courses in language development. 999999.

ECE 752. Theory/Res Literacy Dev Instr. 3 Hours.

Philosophical and psychological beliefs regarding literacy development. 999999.

ECE 753. John Dewey and the Early Childhood Curriculum. 3 Hours.

Dewey's philosophy, epistemology; relationship to early childhood education and development.

ECE 760. Current Issues in Education. 2-3 Hours.

Internship.

ECE 774. Advanced Seminar in Language Development. 3 Hours.

Relationship of thinking and knowing to language development; strategies for analysis; strengths and weaknesses of techniques of examining language development.

ECE 790. Internship in Early Childhood Education and Devel. 3-9 Hours.

Internship.

ECE 791. Field Studies in Early Childhood Education. 1-6 Hour.

Prerequisite: Permission of instructor.

ECE 792. Directed Readings in Research. 3 Hours.

Review of research in early childhood education to gain understanding of conceptual and methodological basis.

ECE 793. Individual Research in Early Childhood Education. 3 Hours.

Recent research in early childhood education; systematic solutions to problems in education.

ECE 794. Current Research Topics in Early Childhood Educ. 1-3 Hour.

Philosophical aspects of scientific methods in education; functions of paradigms, theories, and models in inquiry; theory development and validation; major types of experimental and nonexperimental inquiry appropriate to study of educational phenomena.

ECE 798. Non-Dissertation Research. 1-12 Hour.

The course provides for supervised research experience under the direction of a graduate faculty member within the School of Education. The topic for an ECE 798 course must relate to the discipline or specializations within early childhood education and child development. The course is only available to students who have been admitted to the doctoral program in ECE.

ECE 799. Dissertation Research. 1-12 Hour.

Doctoral research **Prerequisite:** Admission to candidacy.

Prerequisites: GAC D

ECG-Counseling, Human Services Courses**ECG 600. Intro to Community Counseling. 3 Hours.**

Individuals entering the counseling profession to work with community agencies and organizations are facing a paradigm shift in the way many traditional counselors think and act. This course addresses the specific needs of students preparing for contemporary counseling careers in community/agency settings including the multi-faceted roles and functions of a professional counselor, the counseling needs of special community populations, and the professional/ethical issues unique to community counseling.

ECG 612. Professional Orientation. 3 Hours.

Emphasis on understanding of professional roles and responsibilities; ethical and legal issues; historical perspectives; preparation standards; credentialing; trends and issues in the counseling profession.

ECG 613. Foundations of Substance Abuse. 3 Hours.

This course is designed to introduce the student to the counseling specialization of substance abuse counseling. Students will be guided through (a) a critical examination of the etiological theories of substance abuse, (b) the pharmacological, physiological, psychological, and behavioral effects of the most common psychoactive drugs, (c) the role and function of self-help groups, and (d) the role and function of substance abuse counseling professionals.

ECG 619. Special Issues for School Counselors. 3 Hours.

This course will expose the school counselor-in-training to a variety of critical incidents. These incidents (situations) will cover a variety of experiences which will be presented in a seminar environment and will require the student counselor's expertise and proper response. Authorities from the various school systems, law enforcement agencies, counseling/ mental health agencies, and child protective agencies will provide knowledge and insight from their perspectives.

ECG 620. Foundations of School Counseling. 3 Hours.

Social, psychological, economic, and philosophic trends leading to development of guidance programs in American schools. Organization and administration of guidance services.

ECG 621. Theories of Individual Counseling. 3 Hours.

Educational, vocational, and personal counseling. Observations and simulations.

ECG 622. Group/Classroom Guidance in Schools. 3 Hours.

The process and practice of group and classroom guidance and counseling with children (K-12) will be explored.

ECG 623. Comprehensive Counseling and Guidance: M/H School. 3 Hours.

Principles and practices of comprehensive counseling and guidance in the middle/high school related to curriculum, guidance services, and the guidance program.

ECG 624. Assessment. 3 Hours.

Assessment in Counseling.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] or EPR 590 [Min Grade: C]

ECG 626. Group Counseling: Process and Procedures. 3 Hours.

Theory and Processes of Group Guidance.

Prerequisites: ECG 621 [Min Grade: C]

ECG 627. Comprehensive Counseling and Guidance: M/H School. 3 Hours.

Guidance in Elementary School.

ECG 628. Social and Cultural Diversity. 3 Hours.

Societal Issues in Counseling.

ECG 629. Counseling Families in a Multicultural Society. 3 Hours.

The intent is to facilitate an understanding of family dynamics and cultural sensitivity. Counseling Families in a Multicultural Society provides opportunities for students to explore, understand, and appreciate families from culturally diverse backgrounds. Contents includes family and multicultural theories/concepts related to structure, dynamics, growth and development, assessment, possible counseling interventions, and research related to health promotion, maintenance, and restoration of diverse cultural groups.

ECG 630. Career Development: Vocational and Life Planning. 3 Hours.

Career Development: Theory and Research.

ECG 631. Suicide Prevention. 3 Hours.

The course will address the epidemiology of suicide, demographic and incidence information about at-risk groups, risk factors, protective factors, warning signs, assessment of emergency risk and chronic risk, intervention strategies, nomenclature, national strategy planning, prevention advocacy, and attention to the bereaved and complicated mourning and subsequent postvention. Students will be engaged in case studies and assessment exercises, research and review into the literature, hear from guest speakers including advocates and survivors, journal writing and reflection, exams, and presentations.

ECG 637. Adlerian Family Counseling. 3 Hours.**ECG 638. Practicum I: Clinical Skills and Techniques. 3 Hours.**

Practicum: Introduction to the Counseling Process.

Prerequisites: ECG 621 [Min Grade: C]

ECG 650. Diagnosis and Treatment of Psychological Disorders. 3 Hours.

Counseling the Psychologically Impaired Client.

ECG 651. Human Sexuality for Counselors. 3 Hours.

This course is an overview of a family systems approach to understanding and treating clinical issues related to human sexuality.

ECG 652. Advanced Counseling Techniques. 3 Hours.

This course will involve the study of theoretical approaches to counseling which have been demonstrated to be culturally-relevant and conceptually inclusive of multiple theories and techniques: Ivey's Developmental Counseling and Therapy (DCT) and Adlerian Individual Psychology (other techniques will also be explored). Selected readings, academic discussion and clinical application will be stressed. Critical thinking and active participation are essential. Students will focus on the application of theoretical information towards a goal of case conceptualizations as a precursor to effective treatment planning.

Prerequisites: ECG 621 [Min Grade: C] and ECG 638 [Min Grade: C]

ECG 653. Counseling Children and Adolescents. 3 Hours.

This course will review current evidenced based treatment interventions for children and families. Candidates will learn play therapy techniques, art therapy techniques, and behavioral interventions including how to create behavioral contracts, and methods for writing informative treatment plans. Candidates will also learn specific strategies for engaging parents and siblings in treatment, and will learn specific structural and narrative based theoretical approaches to family therapy.

ECG 660. Dynamics of Child Sexual Abuse. 3 Hours.**ECG 661. Play Therapy I. 3 Hours.**

Counseling children. Counseling theories and techniques appropriate to working with children are explored. Play Therapy is emphasized.

ECG 662. Play Therapy II. 3 Hours.

Counseling children. Advanced counseling theories and advanced techniques appropriate to working with children are explored. Play therapy is emphasized.

ECG 663. Adventure-Based Counseling. 3 Hours.

Improvement of self-concept and social life skills through physical, spiritual, emotional, and mental development in creative activity outdoors. Natural environment used as a learning laboratory for leadership, teamwork, problem solving, decision-making, conflict resolution, and physical fitness.

ECG 664. Challenge Course Fund II. 3 Hours.

This course continues introduces students to the background, philosophy, ethical issues, and risk management required to high ropes facilitation. Introduces students to a variety of high challenge course initiatives used for learning and problem solving, trust team building, and self-confidence and communication skills. How to present high challenge courses initiatives to diverse groups will be emphasized. Specific attention will be given to addressing learners of different ages and varying abilities. Additionally, an overview will be given of how counseling and ropes courses experiences can be integrated.

ECG 665. Adventure Processing and Facilitation. 3 Hours.

This course provides the skills necessary for facilitating a variety of client groups educational, recreational, corporate, and therapeutic indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, de-briefing, use of metaphors and transfer of learning. Activities are used to facilitate leadership, teamwork, problem solving, decision-making and conflict resolution. This knowledge will enhance students' ability to adapt their program to various groups. How to facilitate and lead group discussion with diverse groups will be emphasized.

ECG 666. Organization and Administration of Adventure Education. 3 Hours.

Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk management for the administrator, operations and file management, legal issues, accreditation standards, staff recruitment, hiring and training, marketing and fiscal management. Special attention will be given to managing an universally designed challenge course.

ECG 691. Seminar: Special Topics in the Helping Profession. 3 Hours.

Emerging trends, techniques, and issues in counselor supervision.

ECG 692. Independent Readings in Counselor Education. 1-3 Hour.**ECG 695. Practicum II: Supervised Field Experience. 3 Hours.****ECG 697. Counseling Internship. 3,6 Hours.**

A field experience in a counseling setting appropriate to the student's program, where the student is expected to participate in all of the activities of the school or agency counseling services, within the constraints of ethical practice.

Prerequisites: ECG 695 [Min Grade: C]

ECT-Collaborative Teacher Educ Courses

ECT 520. Formative and Summative Assessment. 3 Hours.

In-depth analysis of testing, assessment, and accountability applied to special education. Analysis of applied issues such as standards-based reform, annual yearly progress, response to intervention, and program effectiveness. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 521. Program and Lesson Planning. 3 Hours.

This course focuses on the diagnosis and evaluation of students with disabilities using a variety of developmentally appropriate curriculum-based assessments, criterion referenced, and norm-referenced tests. Emphasis is on the interpretation of information from assessments into Individualized Education Program annual goals and objectives, transition planning, and Response to Intervention planning. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 522. Language and Communication Facilitation. 3 Hours.

This course provides information on communication assessment and intervention procedures useful for teachers of students with disabilities. Includes an overview of normal and typical language development and research on effective naturalistic communication interventions. Candidates will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 523. Instructional Methods. 3 Hours.

This course provides information on research-based instructional strategies for equipping students with disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Particular emphasis will be placed on general instructional strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming will be addressed. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 524. Sensory, Health and Physical Methods. 3 Hours.

This course introduces research-based assessment and instructional strategies for equipping students with sensory, health, and physical disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 525. Positive Behavioral Supports. 3 Hours.

This course presents definition and measurement of behavior, reinforcement strategies, systematic program development, basic formats for classroom instruction, and techniques for monitoring student progress. There is an emphasis on procedures for increasing academic and socially appropriate behavior through simulations and practice exercises. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 528. Legal Issues and Trends. 3 Hours.

This course explores current laws and trends relating to special education.

Prerequisites: ECY 600 [Min Grade: C]

ECT 601. Introduction to Technology in Special Education. 1 Hour.

Provides students with the knowledge and skills to begin the process of designing a standards-based electronic portfolio. Students will address the issues regarding the content and construction of electronic portfolios and the purpose of each stage of development. Issues related to formatting options will be demonstrated and critiqued. Students will be required to develop and demonstrate the requisite skills for creating and filing critical information in a digital format. Students will review numerous portfolios for discussion. The focus will be a standards based product which each student will begin during this course.

ECT 620. Formative and Summative Assessment. 3 Hours.

In-depth analysis of testing, assessment, and accountability applied to special education. Analysis of applied issues such as standards-based reform, annual yearly progress, response to intervention, and program effectiveness. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 621. Program and Lesson Planning. 3 Hours.

This course focuses on the diagnosis and evaluation of students with disabilities using a variety of developmentally appropriate curriculum-based assessments, criterion referenced, and norm-referenced tests. Emphasis is on the interpretation of information from assessments into Individualized Education Program annual goals and objectives, transition planning, and Response to Intervention planning. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 622. Language and Communication Facilitation. 3 Hours.

This course provides information on communication assessment and intervention procedures useful for teachers of students with disabilities. Includes an overview of normal and typical language development and research on effective naturalistic communication interventions. Candidates will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 623. Instructional Methods. 3 Hours.

This course provides information on research-based instructional strategies for equipping students with disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Particular emphasis will be placed on general instructional strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming will be addressed. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 624. Sensory, Health and Physical Methods. 3 Hours.

This course introduces research-based assessment and instructional strategies for equipping students with sensory, health, and physical disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 625. Positive Behavioral Supports. 3 Hours.

This course presents definition and measurement of behavior, reinforcement strategies, systematic program development, basic formats for classroom instruction, and techniques for monitoring student progress. There is an emphasis on procedures for increasing academic and socially appropriate behavior through simulations and practice exercises. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 628. Legal Issues and Trends. 3 Hours.

This course explores current laws and trends relating to special education.

Prerequisites: ECY 600 [Min Grade: C]

ECT 650. Master s Seminar in Collaborative Teaching. 3 Hours.

A diagnostic and evaluation course designed to ensure that students have acquired basic competencies in historical, philosophical, legal, and assessment foundations in special education. Competencies addressed in this course also include research, writing, speaking, and computer literacy.

ECT 651. Assessment Foundations in Special Education. 3 Hours.

Designed to prepare special education teachers to assess children and youth in a manner that reflects federal and state mandates and regulations. Students are prepared to appropriately select, administer, and interpret assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

Prerequisites: ECT 650 [Min Grade: C]

ECT 652. Char of Children/Yth w/Learning and Behv Disabilities. 3 Hours.

Details the characteristics, needs, and concerns related to children and youth with mild learning disabilities, mental retardation, and emotional-behavioral disorders. Additional issues addressed in the course are due process, inclusion, collaboration, and diversity as they pertain to these populations of students.

Prerequisites: ECT 650 [Min Grade: C]

ECT 653. Characteristics of Students with Low-Incidence Disabilities. 3 Hours.

Details the characteristics, needs, and concerns related to children and youth with physical, health, sensory, and communication disabilities. Additional topics covered include positioning and handling, assessment, development of health care plans, and transdisciplinary collaboration.

Prerequisites: ECT 650 [Min Grade: C]

ECT 654. Communication and Technology Applications In Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide information on communication facilitation and assistive and instructional technology applications for young children with delays or disabilities. The course examines (a) the use of various communication systems, (b) naturalistic communication strategies, (c) computer-based instruction and management systems to utilize assistive and instructional technology, (d) issues related to the integration of technology into instructional design, (e) a review and analysis of educational software, (f) an exploration of educational considerations of technology for young children with delays or disabilities, (g) an evaluation of assistive technology options, and (h) an overview of instructional and managerial computer applications. Candidates will incorporate evidence-based decision-making, IFSP and IEP development, and program planning to facilitate communication and provide instruction for young children with delays or disabilities and their families.

Prerequisites: ECY 635 [Min Grade: C] or EDU 500 [Min Grade: C] or ECY 600 [Min Grade: C]

ECT 655. Early Primary Curriculum and Methods. 3 Hours.

Universal design, response to intervention, and co-teaching are central components of this course. This course provides information on providing evidence-based instructional strategies and support to young children (K-3) with delays or disabilities. The intent is to equip children (K-3) with the skills and knowledge that will help them thrive in the classroom, as well as other settings. Particular emphasis will be placed on applied teaching strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming in all curricular areas will be addressed. Candidates will incorporate evidence-based decision-making, design instructional programs, provide instruction, and monitor the progress of children K-3 with delays or disabilities. The course also focuses on co-teaching and working as a member of the team along with paraprofessionals, related service personnel, general educators, and families.

Prerequisites: ECY 635 [Min Grade: C] or ECY 600 [Min Grade: C] or EDU 500 [Min Grade: C] or ECY 637 [Min Grade: C]

ECT 656. Transition of Adolescents from Sch to Adulthood. 3 Hours.

Provides students with knowledge and skill in secondary content and methods, including transition from school to adulthood. Issues related to designing, implementing, and evaluating instruction are presented. Additionally, this course provides critical information regarding the informal assessment of the teaching and learning processes. Specific methods for teaching reading, writing, mathematics, and study skills are covered.

Prerequisites: ECT 652 [Min Grade: C]

ECT 657. Teaching in Inclusive Classrooms. 3 Hours.

Provides students with the knowledge and skills to teach learners with low-incidence disabilities in K-12 settings. Course content addresses issues related to positioning and handling, Alabama Extended Standards, IEP development, writing health care plans, assessment, and strategies for teaching reading, math, and writing.

Prerequisites: ECT 653 [Min Grade: C]

ECT 658. Curriculum in General Education. 3 Hours.

Prepares students to utilize the general education curriculum as the foundation for educational programming for children and youth with special needs. IEP writing, using the general education curriculum, team planning, state- and district-wide assessments, and curriculum accommodations and modifications are topics addressed in this course.

Prerequisites: ECT 650 [Min Grade: P] or ECY 635 [Min Grade: C]

ECT 659. Plan and Mang the Teaching and Learning Environment. 3 Hours.

Prepares students to plan and manage the teaching and learning environment effectively. The major emphasis of the course is on the elements of classroom design and preparation. Primary and secondary academic and behavioral interventions are presented. Outcomes expected for students are related to the creation and maintenance of positive, caring classroom communities that facilitate the academic and social development of children and youth with disabilities.

Prerequisites: ECT 650 [Min Grade: P]

ECT 660. Providing Positive Behavior and Social Support. 3 Hours.

Prepares students to plan and manage the teaching and learning environment effectively. The major emphasis of the course is on the elements of classroom design and preparation. Primary and secondary academic and behavioral interventions are presented. Outcomes expected for students are related to the creation and maintenance of positive, caring classroom communities that facilitate the academic and social development of children and youth with disabilities.

Prerequisites: ECT 650 [Min Grade: P] or ECY 635 [Min Grade: C]

ECT 661. Communication and Collaborative Partnerships. 3 Hours.

Provides an opportunity for students to develop the knowledge, skills, and ability to work collaboratively with professionals responsible for services provided to students with disabilities, their families, and their communities. Emphasis will be placed on blending general education, special education, and related services. The course consists of a series of topics and activities that are designed to provide an overview of collaboration and consultation, present issues related to diversity and inclusion, and highlight implications for special educators, general educators, related service personnel, students, the community, and families.

Prerequisites: ECT 650 [Min Grade: C]

ECT 670. Practicum in Collaborative Teaching: Grades K-6. 3 Hours.

Students seeking Collaborative Teacher certification, Grades K-6, are required to complete a practicum experience in a collaborative setting that includes children who present a wide range of disabilities. This practicum experience is tailored to the unique needs and experiences of students seeking this certification.

ECT 671. Practicum in Collaborative Teaching: Grades 6-12. 3 Hours.

Students seeking Collaborative Teacher certification, Grades 6-12, are required to complete a practicum experience in a collaborative setting that includes children who present a wide range of disabilities. This practicum experience is tailored to the unique needs and experiences of students seeking this certification.

Prerequisites: ECT 650 [Min Grade: C]

ECT 672. Internship in Collaborative Teaching: Grades K-6. 3-9 Hours.

Students in the 5th-year, nontraditional program are required to complete a 12-week internship that is to be divided between lower and upper elementary settings. This internship is designed to assist the prospective graduate in virtually all teaching responsibilities in collaborative settings.

ECT 673. Internship in Collaborative Teaching: Grades 6-12. 3-9 Hours.

Students in the 5th-year, nontraditional program are required to complete a 12-week internship that is to be divided between lower and upper secondary settings. This internship is designed to assist the prospective graduate in virtually all teaching responsibilities in collaborative settings.

ECT 674. Advanced Readings and Research in Spec Edu. 3 Hours.

Allows the student to pursue an in-depth investigation of current and timely issues in the field of special education. The instructor and student design an individual program of study during the course, based upon student needs and interests.

Prerequisites: ECT 650 [Min Grade: C]

ECT 675. Survey of Attention Deficit Hyperactivity Disorder. 3 Hours.

Provides teachers with the knowledge and skills necessary to implement an optimal teaching-learning environment for students with attention deficit hyperactivity disorder who represent diverse backgrounds in grades K-12.

ECT 676. Survey of Pervasive Developmental Disorders. 3 Hours.

An in-depth examination of the characteristics, needs, and other concerns of children and youth with pervasive developmental disorders. Topics also include interventions, collaboration, and functional life-skill programming.

ECT 677. Combating Child Abuse and Neglect. 3 Hours.

What constitutes child abuse? Perspectives will be offered from those affected by the tragedy of abuse, including victims, perpetrators, and the community at large: the family, educational, medical, political and legal systems. Intervention and prevention strategies will be stressed.

ECT 679. Advanced Legal Aspects of Special Education. 3 Hours.

Provides students with an in-depth examination of legal information pursuant to individuals with disabilities. The Individuals with Disabilities Education Act and its related amendments, the Americans with Disabilities Act, and Section 504 of the Improvement Rehabilitation Act are major federal laws reviewed in this course. Special education litigation is also addressed during the course.

Prerequisites: ECT 650 [Min Grade: C]

ECT 685. Comm and Lang for Individ w/Low Incidence Disabilities. 3 Hours.

This course is designed as an elective to extend the experiences and knowledge base of students in the area of communication and language development for individuals with low incidence disabilities. The disability areas of focus will be visual impairments, hearing impairments, dual sensory impairments, autism, cerebral palsy, and moderate to severe mental retardation. Students will explore the linkages between speech, language and communication and relate them in application to alternative modes and/or indicators of inner, receptive and expressive language. There will be traditional academic tasks infused with technology and assistive technology applications, reinforced by hands-on learning experiences and field based learning.

ECT 700. ASD: An Introduction. 3 Hours.

Introductory course that focuses on characteristics of children and youth with autism spectrum disorders; trends and issues connected with autism spectrum disorders; and effective practices and strategies for structuring, managing, and promoting social skill development and social interactions between children and youth with autism spectrum disorders.

ECT 701. ASD: App of Assessment Inform. 3 Hours.

Assessment-centered course that will guide the candidate in assessment, intervention, and programming for individuals within the autism spectrum. Candidates will learn to use formal and informal measures to identify student learning, language, sensory and regulatory needs, to design student-centered educational programming, write comprehensive evaluations, and select research based materials that match learner needs.

ECT 702. ASD: Meth Mod to Sev Function. 3 Hours.

Methods course, with special emphasis on low-functioning learners and Individuals with autism spectrum disorders. Particular attention is given effective practices and strategies for teaching and promoting functional and adaptive behavior that will enhance the learner's social responsibility and independent performance of daily activities.

ECT 703. ASD: Meth High Funct Learn- Asp. 3 Hours.

Methods course, with special emphasis on learners with higher functioning autism spectrum disorders and Asperger Syndrome. Particular attention is given effective practices and strategies for teaching and promoting social skill development and proactive social interactions. Autism Spectrum Disorders: Methods for High Functioning Learners and Asperger's Syndrome.

ECT 704. ASD: Collaboration-Consultatio. 3 Hours.

Focuses on collaborative problem solving, consultation and related issues linked to educating students with autism spectrum disorders and related disabilities.

ECT 705. ASD: Sem Adv Methods. 2 Hours.

Autism Spectrum Disorders: Seminars in Advanced Methods (2 credit hours) (20 clinical hours) to be taken concurrently with ECT 710: Autism Spectrum Disorders Practicum.

ECT 710. ASD: Practicum. 3 Hours.

Multi-faceted practicum course that encompasses seminar in advanced methods through ECT 705. ECT 710 is a series of planned activities in diverse, integrated school continuums where participants continue to learn and practice their skills in a regulated program supervised by master teachers identified in the autism spectrum concentration. The required High Stakes Artifacts assist the candidates and their supervisors in evaluating their student teaching competencies. Autism Spectrum Disorders: Practicum, 5-8 credit hours. Must register for ECT 705 and ECT 710 at the same time.

ECT 720. Universal Design for Lrn. 3 Hours.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECT 720L. Field Experience. 1 Hour.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECT 720R. Action Research. 1 Hour.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECY-Special Education Courses**ECY 600. Introduction to Exceptional Learner. 3 Hours.**

An overview of exceptionality as it pertains to children and adults. Both high and low incidence populations will be examined. Each area of exceptionality will be reviewed in terms of etiology, diagnosis, prevalence, remediation, and educational strategies.

ECY 607. Counseling Parents of Exceptional Children. 3 Hours.

Dynamics of family life and parental and sibling reactions to handicapped individuals are addressed in this course. Prerequisite: ECY 600.

ECY 635. Foundations of Early Childhood Special Education. 3 Hours.

This is the introductory graduate course in the early childhood special education program, which is designed to provide an overview of the field of early intervention/early childhood special education (EI/ECSE) and address policy issues, the importance of collaboration, and future directions. Candidates must develop competencies in the areas of historical and philosophical foundations of EI/ECSE, federal, state, and local laws and legal requirements, characteristics of young children with known or suspected disabilities, family-professional partnerships, service delivery options, recommended practices, current policy issues and trends, and professionalism and ethics. Another important aspect of this course is professional development and life-long learning. Candidates must demonstrate a number of research and technology skills such as: accessing resources to support graduate studies; conducting reviews of the early childhood special education resources and literature; using American Psychological Association (APA) professional style writing; utilizing technology to support graduate studies; and identifying professional development resources for life-long learning. Course content and assignments are designed to promote critical thinking, problem solving skills, evidence-based practice application, and resource identification.

Prerequisites: EDU 500 [Min Grade: C] or ECY 600 [Min Grade: C]

ECY 636. Early Intervention and Preschool Curriculum and Methods. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children (birth through five) with known or suspected disabilities and their families from a variety of social, ethnic, and racial backgrounds. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying current curriculum and methods for young children. Special emphasis will be placed on supporting families in all aspects of intervention. Attention will be given to developmentally and individually appropriate practices that facilitate inclusive environments. Candidates will be familiarized with instructional strategies and technologies. Course content and assignments will promote the use of critical thinking skills, problem solving, and technologies as they are applied to instructional programs for young children with known or suspected disabilities and their families. The course objectives will be assessed through completion of the course requirements and class participation.

Prerequisites: EDU 500 [Min Grade: C] or ECY 600 [Min Grade: C] or ECY 535 [Min Grade: C] or ECY 635 [Min Grade: C]

ECY 637. Assessment in Early Childhood Special Education. 3 Hours.

The purpose of this course is to prepare the candidate with knowledge and practical applications regarding the screening and assessment of young children with known or suspected disabilities (ages birth through eight). Both child-level and family-level assessment procedures will be emphasized. The candidate completing this course will be prepared to make professional decisions regarding the screening, assessment, program planning, and progress monitoring of young children with disabilities. Course content and assignments will promote critical thinking and problem solving skills. The content of this course is based on evidence-based practices, which integrate the best available research evidence with professional and family wisdom and values. Emphasized throughout this course are the following objectives: how to be a member of a transdisciplinary team in providing services in the natural environment, how respond to cultural diversity, how to provide services in high-poverty communities and LEAs, and how to utilize evidence-based practices in all aspects of assessment. These priority areas will be addressed throughout the course.

Prerequisites: EDU 500 [Min Grade: C] or ECY 600 [Min Grade: C] and (ECY 535 [Min Grade: C] or ECY 635 [Min Grade: C])

ECY 638. Physical and Health Care Support in Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children with physical and health impairments. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying typical and atypical motor development and neurodevelopment. Candidates will become proficient in motor skill facilitation, positioning, handling, feeding and health care support. The course objectives will be assessed through completion of the course requirements and class participation.

Prerequisites: EDU 500 [Min Grade: C] or ECY 600 [Min Grade: C] or ECY 535 [Min Grade: C] or ECY 635 [Min Grade: C]

ECY 661. Nature and Needs of the Visually Impaired. 3 Hours.

Historical perspectives; definition and characteristics of persons who are blind, visually impaired or deafblind; and educational considerations. Prerequisite: ECY 600.

Prerequisites: ECY 600 [Min Grade: C]

ECY 662. Meth and Material for Teaching the Visually Impaired. 3 Hours.

Principles and procedures for developing and implementing curricula for persons who are blind, visually impaired or deaf-blind. Prerequisites: ECY 600 and 661.

Prerequisites: ECY 600 [Min Grade: C] and ECY 661 [Min Grade: C]

ECY 663. Orientation and Mobility. 3 Hours.

Principles and fundamentals in teaching spatial orientation; guided practicum of demonstration, adaptations necessary for persons who are blind, visually impaired or deaf-blind. Prerequisites: ECY 600, 661, and 662.

ECY 664. Braille. 3 Hours.

Principles of teaching reading, transcribing and writing Braille; tests, curricula and technology for Braille literacy. Prerequisites: ECY 600, 661, 663.

ECY 665. Anatomy and Educational Implication of the Eye. 3 Hours.

Knowledge and evaluation of the visual system and use of low vision devices and other prescriptive devices for persons who are blind, visually impaired or deaf-blind; Prerequisites: ECY 600, 661, 663, and 664.

Prerequisites: ECY 600 [Min Grade: C] and ECY 661 [Min Grade: C] and ECY 662 [Min Grade: C] and ECY 663 [Min Grade: C] and ECY 664 [Min Grade: C]

ECY 670. Practicum in Early Childhood Special Education. 3-6 Hours.

Provides individualized field-based experiences to meet the unique needs of graduate candidates in ECSE. Students complete practicum experiences in settings that include children who present a wide range of disabilities within the 0-3, 3-5, 5-8 year age ranges. This practicum experience is tailored to the unique needs and experiences of each student. Prerequisites: ECY 600, 635, 636, 637, 638, and Permission of Instructor.

ECY 672. Internship in Early Childhood Special Edu. 3-6 Hours.

Provides individualized field-based experiences that will meet the unique needs of ECSE candidates in the 5th year, nontraditional program. Students complete a 12-week internship in settings that include children who present a wide range of disabilities within the 0-3, 3-5, 5-8 year age ranges. This internship experience is tailored to the unique needs and experiences of each student. Prerequisites: ECY 600, 635, 636, 637, 638, and permission of instructor.

ECY 686. Practicum In Special Education: Visually Impaired. 3 Hours.

Clinical experiences with persons who are blind, visually impaired or deaf-blind in various educational settings; demonstration of curriculum development, assessment, and teaching in structured situations. Prerequisites: ECY 600, 661, 662, 663, 664, and 665.

ECY 689. Advanced Topics in Special Education. 1-6 Hour.

A group seminar focused on transdisciplinary teaming in early intervention and early childhood special education. The course is designed for students representing the discipline of early childhood special education, general early childhood education, speech-language pathology, physical therapy, and occupational therapy. Prerequisites: Permission of instructor, ECY 600.

EDA-Art Education Courses**EDA 583. Methods of Teaching Art. 3 Hours.**

Preparation to teach art in schools. Learning experiences necessary for development of essential teaching competencies. Materials and methods in art studio media, technology skills for art classroom, art history and criticism, and current issues in art education. Admission to Alternative Master's Program required.

EDA 584. Methods of Teaching Art Lab. 1 Hour.

Methods of Teaching Art Lab required.

EDA 591. Art Education Final Exhibition. 3 Hours.

M.A. students plan and mount exhibition of work during final year. Graphicdesign students may prepare public portfolio presentation instead of exhibition. Art History students prepare a thesis research paper. Course is an independent study course taken with the student s thesis advisor.

EDA 651. Innovative Practices in Teaching Art in School. 3 Hours.

Innovative practices in planning, instructing, and evaluating in art education. Specialized study of contemporary needs in art and art education.

EDA 680. Art Experiences in the Teaching of Art N-12. 3 Hours.

Concepts, methods, and skills for teaching art.

EDA 690. Internship in Art Education N-12. 3-9 Hours.

For Alternative Master's Program students. Observation and student teaching in elementary and secondary schools (15 full weeks in school setting. Approval of internship application required.

EDC-Curriculum Education Courses**EDC 651. Innovative Practices in Curriculum. 3 Hours.**

Current issues and special topics in curriculum; topics vary. May be repeated with different subject areas.

EDC 655. Curriculum Principles and Practices. 3 Hours.

Current curriculum practices; concepts and principles underlying their development.

EDC 656. Developmental Prob and Issues in Curriculum Construc. 3 Hours.

Developmental Prob and Issues in Curriculum ConstrucIncludes field study of curriculum in teachers' own schools.

EDC 694. Curriculum Seminar. 1-3 Hour.

Prerequisite: EDC 655 or permission of instructor.

Prerequisites: EDC 655 [Min Grade: C]

EDC 706. The Dynamics of Educational Change. 3 Hours.

Defining roles as change agents; understanding school as unit undergoing change; guiding perspectives in making changes. Prerequisite: Admission to graduate school.

EDC 707. Introduction to Teacher Leadership. 3 Hours.

This course is intended to be the first course in the Ed.S. program where students will begin their teacher leadership project.

EDC 711. Analysis and Evaluation of Teaching. 3 Hours.

Strategies and models for analysis of teaching. Use of data in evaluating teacher effectiveness. Prerequisite: Master's degree.

EDC 712. Seminar in Curriculum and Instruction. 3 Hours.

Critical issues and research. Development and discussion of individual research. Prerequisite: Master's degree.

EDC 713. Educational Issues and Human Diversity. 3 Hours.

Social, economic, and cultural forces contributing to deprivation; implications for teachers, administrators, and educational staff. Prerequisite: Master's degree.

EDC 720. Problems and Issues in Education. 3 Hours.

Exploration of problems and issues associated with education. Emphasis on needs of teachers and implications of the current problems and issues. Prerequisite: Master's degree.

EDC 725. Advanced Study in Social Studies Curriculum. 3 Hours.

Major problems and issues associated with social studies curriculum and instructional practices. Prerequisites: Completion of graduate course in teaching social studies and experience in teaching social studies.

EDC 728. EDS Research Project I. 3 Hours.

Development of research proposal. Proposal must be accepted and approved by appointed faculty committee.

Prerequisites: EPR 596 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 607 [Min Grade: C]

EDC 729. EDS Research Project II. 3 Hours.

Research project Prerequisites: EPR 692, EDC 728, EPR 596 or EPR 608, and 12 hours in Ed.S. program.

Prerequisites: EDC 728 [Min Grade: C] and EPR 596 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 607 [Min Grade: C]

EDC 731. Curricular Design & Implementation Field Experience. 3 Hours.

Recognizing, assessing, and supporting quality instructional practices; program evaluation. School-based problem research project and field experience.

EDC 731L. Field Experience. 1 Hour.

This course covers the following areas: Standards-Based Content Knowledge, Instructional Strategies, Scope and Sequence of Curriculum, and Horizontal and Vertical Curriculum Design.

EDC 731R. School-Based Problem Research: Curriculum Design Implementation. 1 Hour.

This course covers the following areas: Standards-Based Content Knowledge, Instructional Strategies, Scope and Sequence of Curriculum, and Horizontal and Vertical Curriculum Design.

EDC 732. Culturally and Linguistically Responsive Instruction. 3 Hours.

Culturally responsive instruction, effective instruction of culturally and linguistically diverse (CLD) students, strategies to support academic and linguistic growth of English Learners, outreach to CLD parents and families, and professional learning communities.

EDC 732L. Field Experience for Culturally and Linguistically Responsive Instruction. 1-2 Hour.

Field-based experience to accompany EDC 732.

Prerequisites: EDC 732 [Min Grade: C](Can be taken Concurrently)

EDC 732R. School-Based Problem Research for CLD Responsive Instruction. 1 Hour.

Action-research project to accompany Culturally and Linguistically Responsive Instruction.

Prerequisites: EDC 732 [Min Grade: C](Can be taken Concurrently)

EDF-Foundations of Education Courses**EDF 600. Urban Education. 3 Hours.**

An examination of the historical, social, political, and economic factors that shape urban education in America.

EDF 601. The History of American Curricular Thought. 3 Hours.

An examination of American educational history using primary source documents to provide insight into the evolution of curriculum, policy, and educational practice.

EDF 602. Critical Social Issues in American Education. 3 Hours.

An examination of contemporary social issues facing American schools, from politics and policy, school structure, and curriculum to pedagogical practice. The relationship of the school to society is also addressed.

EDF 603. Philosophy and Education. 3 Hours.

An examination of various philosophical schools of thought, their application to the field of education, and their relevance to teaching, learning, and life.

EDF 604. Social Philosophies and Education. 3 Hours.

An examination of various schools of social and political philosophy and theories pursuant to contemporary educational problems. Topics may include class structure, the cultural context of schooling, identity politics, ecological issues, physical and mental health issues, and the history of social theory related to educational policy and practice.

EDF 605. Educational Foundations and Urban Life. 3 Hours.

The UAB School of Education maintains that specific knowledge, understandings, attitudes, and skills are necessary for a teacher to be effective in the urban setting. This knowledge extends beyond the classroom and embraces the total community and its families. Thus, effective urban teachers must understand the child, the family, and the community. The UAB School of Education further maintains that the successful teacher must develop ways to cut across home and school; does not separate academic from social, moral, and emotional development; and ideally incorporates all of the resources of the school (including parents) into a common blending of care and education. to develop teachers who can service students and families in these.

EDF 606. Social Movements in Education. 3 Hours.

An examination of how the Progressive education movement, along with other major social movements in recent history have shaped American education. The history of the Civil Rights Movement in Birmingham and its impact on schools, communities, and the lives of educators and students are of special interest.

EDF 608. Theories of Knowledge. 3 Hours.

An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

EDF 616. Comparative Education. 3 Hours.

An examination of the cultural forces influencing the structure and function of education in selected countries.

EDF 620. Culture and American Education: Race Class and Gender. 3 Hours.

An examination of the interlocking influences and socially constructed meanings and understandings of culture, race, ethnicity, class and gender in American education.

EDF 624. Ethics and Education. 3 Hours.

The focus of this course is twofold: first, it covers some of the foundational materials in the philosophy of ethics and their application to the field of education; second, it looks at the present moral context of schools and the problems and potentials of morally directed education.

EDF 691. Special Problems in The Foundations of Education. 3 Hours.**EDF 697. Individual Readings in Foundations of Education. 1-3 Hour.****EDF 698. Individual Research in Foundations of Education. 1-3 Hour.**

EDF 702. Critical Social Issues in American Education. 3 Hours.

An examination of contemporary social issues facing American schools, from politics and policy, school structure, and curriculum to pedagogical practice. The relationship of the school to society is also addressed.

EDF 703. Selected Topics In Educational Philosophy. 3 Hours.

An examination of various philosophical schools of thought, their application to the field of education, and their relevance to teaching, learning, and life.

EDF 706. Social Movements in Education. 3 Hours.

An examination of how the Progressive education movement, along with other major social movements in recent history have shaped American education. The history of the Civil Rights Movement in Birmingham and its impact on schools, communities and the lives of educators and students are of special interest.

EDF 708. Ethical Dilemmas in Educational Administration. 3 Hours.

Ethical Dilemmas in Educational Administration.

EDF 711. Theories of Knowledge. 3 Hours.

An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

EDF 713. History of Educational Philosophy. 3 Hours.

A historically sequenced survey of educational philosophy from the ancient Greeks, 18th century enlightenment thought, American pragmatism, and existentialism to postmodernism.

EDF 716. Comparative Education. 3 Hours.**EDF 720. Cult and Amer Educ: Race Class and Gender. 3 Hours.**

An examination of the interlocking influences and socially constructed meanings and understandings of culture, race, ethnicity, class, and gender in American education.

EDF 724. Ethics and Education. 3 Hours.

The focus of this course is twofold: first, it covers some of the foundational materials in the philosophy of ethics and their application to the field of education; second, it looks at the present moral context of schools and the problems and potentials of morally directed education.

EDF 750. Special Problems in the Foundations of Education. 3-9 Hours.

A topical seminar on special problems and issues in educational foundations. Can be taken for 3, 6, or 9 credit hours.

EDF 797. Independent Studies. 3 Hours.

Independent readings under the direction and supervision of EDF faculty. Doctoral status and the permission of the instructor are required.

EDF 798. Individual Research in the Foundations. 3 Hours.**EDH-Education Honors Courses****EDL-Educational Leadership Courses****EDL 601. Foundations of Instr. Ldrshp. 3 Hours.**

The purpose of the course is to provide a strong foundation in strengthening knowledge and skills in instructional leadership. The student will be prepared to become an instructional leader who engages the school community in developing a shared vision; will plan effectively; will use critical thinking and problem-solving; will collect, analyze and interpret data; allocate resources and evaluate results for the purpose of continuous school improvement. Requires admission to the EDL Masters Program.

EDL 602. Fld Exp: Found of Inst Ldrshp. 1 Hour.

Through observing, participating, and leading field based experiences assigned in EDL 601, Foundations of Instructional Leadership students will gain practical knowledge and skills needed to be effective school leaders.

EDL 603. Data Driven Decision Making. 3 Hours.

This course prepares the future school leader to effectively use and interpret data in all form to lead and monitor continuous school improvement. Students will become conversant with technologies that enhance classroom instruction. The students will lead in a school improvement project and conduct a needs assessment for technology planning. Requires admission to the Master's Program in Instructional Leadership.

EDL 604. Fld. Exp. in Data Driven Dec.. 1 Hour.

Through observing, participating, and leading field based experiences assigned in EDL 603, Data Driven Decision Making for School Improvement, students will gain practical knowledge and skills in using data and techniques to enhance the leadership of a school.

EDL 605. Residency in Inst. Ldrshp. 6 Hours.

The purpose of the Residency in Instructional Leadership is to give the future leader authentic experiences in a continuum of observing, participating, and leading in K-12 schools without the distraction of teaching responsibilities or other coursework requirements. Class to be conducted in 10 consecutive days in local school/schools.

Prerequisites: EDL 601 [Min Grade: C] and EDL 603 [Min Grade: C]

EDL 606. Supervision/ Ment. Inst. Staff. 3 Hours.

The purpose of this course is to prepare the future school leader to utilize knowledge of human resources to accomplish school and system goals. This involves developing the ability to design and implement effective professional development and facilitate teaching that will impact student achievement. A final unit will assist the future leader in seeking mentoring opportunities for him or herself.

EDL 607. Fld Exp. in Super / Mentoring. 1 Hour.

Through observing, participating and leading field based experiences assigned in EDL 606, Supervision and Mentoring of Instructional Staff, students will gain practical knowledge and skills in implementing staff development, supervisory staff and creating mentoring opportunities for new teachers and oneself.

EDL 608. Org. & Financial Mgt. 3 Hours.

This course is designed to prepare instructional leaders to develop the knowledge and skills to apply financial procedures for public schools in Alabama. An emphasis on strategies to utilize student data as the impetus for allocating financial resources will be part of the curriculum. In addition, students will explore guidelines for creating safe school facilities.

EDL 609. Fld. Exp. in Org & Finc Mgmt. 1 Hour.

Through observing, participating, and leading field-based experiences assigned in EDL 608, students will gain practical knowledge and skills in applying financial procedures, allocating resources and creating safe K-12 schools.

EDL 610. Legal & Ethical Foundations. 3 Hours.

The purpose of this course is twofold: (1) Candidates will give a fundamental knowledge of ethical principles based on the Alabama Educator Code of Ethics and guidelines of the State Ethics Commission and (2) Candidates will gain a working knowledge of legal principles established by local, state, and federal legislatures and judicial requirements.

EDL 611. Fid. Exp. in Legal/Eth Found. 1 Hour.

Through observing, participating and leading field based experiences assigned in EDL 610 Legal and Ethical Foundations of School Leadership, students will gain a working knowledge of legal and ethical principles necessary to employ in K12 school leadership.

EDL 612. Best Prac. Inst. Ldrship. 3 Hours.

The purpose of this course is to prepare instructional leaders who can create positive learning environments for all students. Special emphasis will be placed on using data to assess and improve student achievement. Students will explore the needs of diverse populations and the legal mandates for providing services to diverse student populations.

EDL 613. Supervision and Curriculum Development. 1 Hour.

Through observing, participating leading field based experiences assigned in EDL 612, Best Practices for Instructional Leadership for Diverse Populations, students will gain practical experience needed to meet the instructional needs of diverse populations.

EDL 614. Planning for Change. 3 Hours.

This course explores the process and school leader's role in effecting organizational change. Course readings and discussions will help to develop student knowledge and skill bases in effecting change at the individual, organization, and systems levels and will examine key issues in planning for and effecting change among stakeholders groups throughout the school community.

Prerequisites: EDL 611 [Min Grade: C] and EDL 612 [Min Grade: C] and EDL 613 [Min Grade: C]

EDL 615. Non-Thesis in Educational Leadership. 3 Hours.

This course will prepare students for the degree of Master of Education in the preparation of a master's level thesis. The process of reviewing relevant literature and designing a research study will be examined. The course will culminate in the students' development of a proposal.

EDL 617. Politics of Education. 3 Hours.

Politics of Education. Education leaders learning to take action within the complex maze of political relations within schools, between schools and their communities, and within levels of government. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 618. Ethics and Leadership. 3 Hours.

Ethics and Leadership. An examination of ethical issues and dimensions of ethical decision making. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 619. School-Based Problem Solving. 3 Hours.

School-Based Problem Solving. An analysis and application of techniques for school-based problem solving. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 620. Public School Organization and Administration. 3 Hours.**EDL 621. The School Principalship. 3 Hours.****EDL 622. Clinical Supervision: Administrators and Supervisors. 3 Hours.**

Clinical Supervision: Administrators and Supervisors.

EDL 623. School Finance. 3 Hours.

In this course students will learn about the process of developing and monitoring a school budget. Various approaches to budget development will be examined, including line-item, zero-based, and program-based budgeting. The course will also explore multiple sources of revenue for schools, and the processes and guidelines for budget allocation, procurement, and expenditure.

EDL 625. Education Management. 3 Hours.

Education Management. An overview of education management techniques for the improvement of the education enterprise and student learning. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 626. Advanced Clinical Supervision: Admin and Supervisors. 3 Hours.

This course will explore the role of school principals, assistant principals, and other instructional supervisory personnel in working with instructional staff to improve instruction to affect increased levels of learning for all students.

Prerequisites: EDL 522 [Min Grade: C]

EDL 630. School and Community. 3 Hours.**EDL 631. Education and the Political Environment. 3 Hours.****EDL 635. Survey of School Law. 3 Hours.****EDL 637. Legal Liability and the Educator. 3 Hours.****EDL 640. Introduction to Community Education. 3 Hours.****EDL 641. Community Education for School Administrators. 3 Hours.****EDL 642. Operation and Admin: Community Education Program. 3 Hours.****EDL 643. Community Resources Workshop. 3 Hours.****EDL 644. Instructional Supervision. 3 Hours.**

This course will explore the role of the school principal and other key school leaders in the process of guiding instructional staff toward improvement and excellence in instruction. Key instructional processes will be examined, including planning, pre-observation conferencing, observation of instruction, observational strategies and techniques, post-observation conferencing, and planning for professional improvement.

EDL 660. Administrative Leadership I. 3 Hours.**EDL 661. Simulation in Educational Leadership. 3 Hours.**

This is a course designed to provide practice for prospective school administrators in observing teachers in the classroom. Emphasis is placed on developing the skill base of school leaders in observing, note-taking, and providing meaningful feedback to classroom teachers regarding the delivery of instruction and student response. Skills are also developed in assisting teachers in writing their own professional development plans based upon classroom observation.

EDL 665. Supervision of Instruction in Elementary Schools. 3 Hours.

This course focuses on the process of classroom observation and feedback for prospective school administrators planning for a career in elementary school leadership. Emphasis is placed on the development and use of observational strategies and techniques across content areas and on the development of instructional skills for teachers.

EDL 666. Supervision of Secondary Instruction. 3 Hours.

This course focuses on the process of classroom observation and feedback for prospective school administrators planning for a career in secondary school leadership. Emphasis is placed on the development and use of observational strategies and techniques across content areas and on the development of instructional skills for teachers.

EDL 670. Theories in Educational Leadership. 3 Hours.

In this course leading theories pertaining to the process of learning, instruction, and leadership will be explored. The course involves readings of several key theorists in leadership, discussion of those theories, and emphasizes the practical application of those theories to the everyday professional work of school administrators.

EDL 671. Practicum in Elementary Instructional Supervision. 3 Hours.

In this course, pre-service elementary school administrators will be required to observe classroom teachers in the act of delivering instruction. Emphasis is placed on developing specific observational skills and techniques in observing classroom instruction, note-taking, and the provision of timely and meaningful feedback for elementary classroom teachers in order to improve their instructional skills and to affect increased levels of learning for all students.

EDL 672. Practicum in Secondary Instructional Supervision. 3 Hours.

In this course, pre-service secondary school administrators will be required to observe classroom teachers in the act of delivering instruction. Emphasis is placed on developing specific observational skills and techniques in observing classroom instruction, note-taking, and the provision of timely and meaningful feedback for secondary classroom teachers in order to improve their instructional skills and to affect increased levels of learning for all students.

EDL 675. Administration and Supervision of Student Teaching. 3 Hours.

In this course, pre-service school administrators will explore best practices in coaching and mentoring student teachers. Key issues of concern to the effective development of pre-service teachers will be addressed, including processes of planning for instruction, classroom management, conferencing with parents, building a familiarity with curriculum and instructional delivery, and planning for a professional interview.

EDL 685. Workshop in Administration and/or Supervision. 1-3 Hour.**EDL 690. Internship in Educational Leadership. 1-6 Hour.**

This course provides practical, hands-on experience for pre-service school administrators wherein they shadow practicing school administrators to observe the many demands and functions of the role. Students work directly in a school setting with a selected school administrator, and assume leadership in several leadership projects as collaboratively identified by the school administrator and student.

EDL 691. Practicum in Educational Leadership. 3 Hours.

Practicum in Educational Leadership.

EDL 692. Individual Readings in Educational Leadership. 3 Hours.**EDL 694. Seminar in Educational Leadership. 1-3 Hour.****EDL 695. Community Education Seminar. 1-3 Hour.****EDL 696. Practicum in Community Education. 3-6 Hours.****EDL 698. MR Lev Non-Thesis Res. 3 Hours.****EDL 699. Thesis Research. 1-6 Hour.**

Advanced Research in Educational Leadership.

Prerequisites: EPR 608 [Min Grade: C] and GAC A

EDL 701. Organizational Leadership and Decision Making I. 3 Hours.

This course provides an introduction for school leaders in the process of facilitating shared decision-making. Basic concepts of organizational theory are explored with an examination of how these theories might be applied to practice in order to build school leaders' effectiveness in involving all stakeholder groups in making important school-based decisions.

EDL 702. Organizational Leadership and Decision Making II. 3 Hours.

This course provides an in-depth examination for school leaders in the process of facilitating shared decision-making. Selected organizational theories are explored more deeply with an examination of how these theories might be applied to practice to build school leaders' effectiveness in involving all stakeholder groups in making important school-based decisions. School leaders will develop expertise in the knowledge and application of a selected organizational theory as applied to decision-making.

EDL 703. Theory and Practices of Supervision Leadership. 3 Hours.

Specific leadership and supervisory or management theories will be explored with an emphasis on how these theories can help to guide and enhance school leaders' practice. An array of theories will be introduced, and students will select one or two theories to study more deeply. Students will be required to examine their own professional practice in terms of the selected theories and explore how the theoretical framework helped them understand their practice more deeply.

EDL 704. Educational Law and Policy Development. 3 Hours.

In this course, students will take an in-depth look at influential court decisions and legislation that affects the operation of schools and school districts in modern society. Furthermore, the processes, responsibilities and multiple roles in the development of school and school district policy will also be explored.

EDL 705. The Management of Educational Programs and Services. 3 Hours.

In this course, the process and responsibilities of operational leadership and management will be explored. Oversight resource allocation, facilities functions, transportation, food service, school-wide discipline and school safety are among several key topics to be examined.

EDL 706. Current Issues in Community Education. 3 Hours.**EDL 707. International Aspects of Community Education. 3 Hours.****EDL 708. Administration Leadership II. 3 Hours.****EDL 709. Theories of Educational Leadership. 3 Hours.****EDL 710. Mentoring for Educational Leadership. 3 Hours.**

In this course, students will develop their knowledge base and skill sets in mentoring instructional staff in the development of their own practice as classroom instructors. Concepts of mentoring as a key process in professional development of teachers will be examined. Specific mentoring skills and strategies will be emphasized. Students will be required to examine current mentoring program goals and processes as well as practice their own skills in mentoring.

EDL 711. Collaborative Problem Solving. 3 Hours.

This course is designed to introduce candidates to the analysis and application of strategies for school-based problem solving. Course content will include: an introduction to the basic tenets of change in schools, learning to use quality tools (TQM), shared decision-making/group processes/ effective teaming/mentoring & cognitive coaching in professional development, using data to make decisions, and practical applications of problem-solving in schools.

EDL 711L. Collab Probl Solv: Fld Exper. 1 Hour.

The field experience consists of investigating the processes of collaboration and change that are currently implemented in the candidate's own school district.

EDL 711R. School-Based Problem Research. 1 Hour.

The action research consists of identification of a project, usually within the candidate's own school district, that will require collaboration with a selected problem-solving team at one's school site.

EDL 712. School System Administration. 3 Hours.**EDL 713. Leadership of Special Education Programs. 3 Hours.****EDL 714. Advanced School Business Management. 3 Hours.****EDL 715. Non-Thesis Research in Education Leadership. 3 Hours.****EDL 716. Workshop in Administration and/or Supervision. 1-6 Hour.****EDL 717. Leading Change Through Action Research. 3 Hours.**

The purpose of this course is to strengthen knowledge and skills in the areas of effective leadership and systemic organizational change. This course will teach participants the skills and strategies to prepare for and introduce change in their schools through an identified school-based problem solving project. Candidates will be required to lead a collaborative effort of analyzing and applying strategies and quality tools in addressing a school-based problem, preferably one that is impacting student achievement. Course content will include: an introduction to quality tools (TQM), shared decision-making, group processes, effective teaming, and using data to make decisions. Co-Requisite: EDL 717L.

EDL 717L. Field Experience for Leading Change Through Action Research. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 717-L. the Field Experience Course is taken concurrently with the core course. CoRequisite: EDL 717 -1 hour credit.

EDL 718. Essential Skills for Organizational Leadership. 3 Hours.

This course is designed to strengthen knowledge and skills essential to effective leadership in the school setting. Candidates will increase their understanding of and skills in utilizing participatory /shared decision making; using data focused on student learning to drive the decision making process; communicating high expectations for student learning; and enhancing human resource development. Candidates will demonstrate the ability to analyze various situations involving community and stakeholder relationships through the structural, human resource, political, and symbolic frames and devise appropriate courses of action based on this analysis of school programs. Co-Requisite EDL 718L.

EDL 718L. Field Experience for Essential Skills for Organizational Leadership. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 718-L. The Field Experience Course is taken concurrently with the core course. CoREquisite: EDL 718 -1 hour credit.

EDL 719. Mentoring & Coaching Skills for School Leaders. 3 Hours.

In an era of ensuring highly qualified teachers through embedded, research-based staff development, the role of supervision and mentoring has taken on an unprecedented role in successful schooling. Supervision and mentoring are at the heart of schooling. In addition, future school leaders need to understand their own mentoring needs, and be comfortable with seeking a mentor for themselves. In this course, candidates will conduct a comprehensive critical examination of mentoring concepts, both for personal development and for instructional supervision of classroom teachers. The skills of supervision through cognitive coaching will be learned and practiced. Implications for individual and group development and the improvement of instruction are emphasized. The field experience, EDL 719L will involve candidates seeking a mentor for themselves, as well as engaging in mentoring a new teacher. Co-Requisite: EDL 719L.

EDL 719L. Field Experience for Mentoring & Coaching Skills for School Leaders. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 719-L. the Field Experience Course is taken concurrently with the core course. Co-Requisite: EDL 719- 1 hour credit.

EDL 720. Field Project in Educational Leadership. 1-6 Hour.**EDL 721. Administration of Staff Personnel. 3 Hours.****EDL 722. Current Issues in Educational Leadership. 3 Hours.****EDL 723. Administration of Educational Programs and Services. 3 Hours.**

Administration of Educational Programs and Services.

Prerequisites: EDL 620 [Min Grade: C]

EDL 724. Educational Leadership Seminar II. 1-3 Hour.**EDL 725. Current Issues and Problems in School Administration. 3 Hours.**

This is a seminar type course that explores current issues affecting the profession of school leadership. Various topics of concern will be presented and discussed. Multiple guest speakers with expert knowledge of selected issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems.

EDL 726. Advanced Clinical Supervision Administrator/Supvis. 3 Hours.**EDL 727. Leading the Adult Learning Community. 3 Hours.**

This course is divided into the following conceptual units: a.

EDL 727L. Field Experience for Leading the Adult Learning Community. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 727-L. the Field Experience Course is taken concurrently with the core course. Co-Requisite: EDL 727.

EDL 728. Management of the Learning Organization. 3 Hours.

The purpose of this course is to strengthen knowledge of and skills in essential management functions within the school or district setting, as noted in specified ISLLC and Alabama Administrative Code Standards. The course will focus on practices and procedures that are vital to the efficient and effective operation of a school or a school district. Co-Requisite: EDL 728L.

EDL 728L. Field Experience for Management of the Learning Organization. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 728-L. The Field Experience Course is taken concurrently with the core course. Co-Requisite: EDL 728.

EDL 729. Advanced Research in Educational Leadership. 1-6 Hour.
Prerequisites: EPR 608 [Min Grade: C]**EDL 730. Advanced Focus on the Principalship. 3 Hours.****EDL 731. Law, Ethics, and Policy for Educational Leaders. 3 Hours.**

The purpose of this course is twofold: 1) Candidates will gain a fundamental knowledge of ethical principles based on the Alabama Educator Code of Ethics and the guidelines of the State Ethics Commission. 2) Candidates will gain a working knowledge of legal principles established by local, state, and federal legislative and judicial requirements. Candidates will be able to demonstrate an understanding of legal and ethical principles related to underrepresented populations within the school setting. Candidates will be able to demonstrate a knowledge and application of the ethical principles stipulated in the Alabama Educator Code of Ethics and accompanying legal precepts. Candidates' ability to make sound legal and ethical decisions will be enhanced through a better understanding of board policies and politics as well as through reflection on and clarification of personal values and beliefs. Co-Requisite: EDL 731L.

EDL 731L. Field Experience for Law, Ethics, and Policy for Educational Leaders. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school in the area of law, ethics, and policy. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 731-L. The Field Experience Course is taken concurrently with the core course. Co-Requisite: EDL 731.

EDL 732. Leadership of Special Programs. 3 Hours.

Leadership of Special Programs coalesces the knowledge of and ability to lead special programs within a school site. Candidates will apply leadership skills in developing a comprehensive home school collaborative project and a comprehensive technology integration project. In addition, candidates will develop curriculum which will align state standards unique to career and technical education. Emphasis will be placed on models of communication, problem solving, conflict resolution and team building principles and skills. Focus will also be placed on best practices in the development of community information, networking, public relations, and media. The technology portion of this class will focus on the total integration of technology into a school community. Co-Requisite: EDL 732L.

EDL 732L. Field Experience for Leadership of Special Programs. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 732-L. The Field Experience Course is taken concurrently with the core course. Co-Requisite EDL 732.

EDL 735. Professional Leadership. 3 Hours.

Provides an overview of key issues related to professional leadership from the perspective of the teacher leader. Special emphasis will be given to the following course themes: Alabama Educator Code of Ethics, ethical and professional conduct, school law and policy, and adult learning.

EDL 735L. Field Experience/Professional Leadership. 1 Hour.

Field-based experience to accompany EDL 735.

EDL 735R. School Based Problem Research Project/Professional Leadership. 1 Hour.

Action-research project to accompany EDL 735.

EDL 746. Practicum in Instructional Leadership. 1 Hour.

[Course required in the Ed.S. program for candidates who completed the Class A Administrative Certification before 2009, before program redesign]. The course content consists of the Practicum activities chosen by the candidate from the menu of Critical Leadership Activities from the Practicum Handbook. The candidate will be required to have a mentor (the same one as for all coursework) and the mentor will assist the candidate in selecting meaningful leadership experiences. Candidates will conduct leadership activities at any time during the four semesters of the Ed.S. program. Where possible, candidates should acquire experiences in diverse settings. The experiences may be conducted at the elementary, middle school, high school, or central office level.

EDL 748. Current Issues and Problems in School Administration. 3 Hours.

Current Issues and Problems in School Administration.

EDL 750. Issues and Problems in School Finance. 3 Hours.

This is a seminar type course that explores current issues affecting the financing and funding of schools both locally and across the nation. Issues such as equity and adequacy in school funding will be examined. Key legislation issues will also be explored. Multiple guest speakers with expert knowledge of selected school finance issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems in school finance.

EDL 752. Advanced Educational Planning. 3 Hours.**EDL 755. Advanced School System Administration. 3 Hours.****EDL 756. Current Legal Problems in Alabama Education. 3 Hours.**
Prerequisites: EDL 535 [Min Grade: C]**EDL 758. Problems in Supervision. 3 Hours.**

This is a seminar type course that explores current issues regarding the effective supervision of schools in the context of recent legislation and challenges. Issues such as developing school culture and strategic planning, supervision of instruction, and addressing the demands of an increasingly diverse clientele will be examined. Professional standards and expectations for school leaders as supervisors will also be explored. Multiple guest speakers with expert knowledge of selected school supervision issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems in the supervision of schools.

EDL 760. Advanced Administrative Leadership. 3 Hours.

This is a seminar type course that explores current issues regarding the effective administration and leadership in schools and school districts. Issues such as standard-based leadership; developing school and district mission, vision, values, and goals; clinical supervision and professional development of instructional and supervisory staff to address student achievement; and addressing the demands of an increasingly diverse clientele will be examined. Multiple guest speakers with expert knowledge in school leadership roles may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to leadership in schools and school districts.

EDL 762. Futurism in Community Education. 3 Hours.**EDL 766. Advanced Clinical Supervision for Admin/Supervisor. 3 Hours.**

This course is designed to provide building principals and district-level administrators a chance to examine, in depth, best practices in clinical supervision of classroom teachers and school administrators. Emphasis is placed on how to help teachers and school-level leaders improve their practice in leading for high levels of student achievement. Although it is not a pre-requisite, this course is designed to build topics covered in EDL 626.

EDL 770. Advanced Administrative Leadership. 3 Hours.**EDL 772. Advanced Technology of Educational Planning. 3 Hours.**
Prerequisites: EDL 732 [Min Grade: C]**EDL 792. Directed Study in Educational Leadership. 3 Hours.****EDL 796. Individual Readings in School Law. 3-6 Hours.****Prerequisites:** EDL 535 [Min Grade: C]**EDL 797. Doctoral Internship in Educational Leadership. 1-12 Hour.****EDL 798. Non-Dissertation Research. 1-12 Hour.****EDL 799. Dissertation Research. 1-12 Hour.****Prerequisites:** GAC D**EDR-Reading Education Courses****EDR 540. Developmental Reading I. 1-4 Hour.**

Materials and methods. Emphasis on planning balanced program and understanding reading process. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 660 [Min Grade: C] and EDU 500 [Min Grade: C]**EDR 541. Literature for Adolescents. 3 Hours.**

Literary works written for or about adolescents.

EDR 543. Developmental Reading II. 3,4 Hours.

Reading process as it relates to content area materials. Includes field experience. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 610 [Min Grade: C]**EDR 551. Reading in Content Areas. 1-3 Hour.**

Reading process; evaluation of content area materials; analysis of different content area textbooks; meeting individual differences.

Prerequisites: EHS 600 [Min Grade: C](Can be taken Concurrently)**EDR 640. Reading Improvement Workshop. 3-6 Hours.**

For inservice teachers of reading. Specific content varies according to needs of teachers.

EDR 645. Foundations of Reading. 3 Hours.

Early literacy experiences; beginning reading instruction; approaches to reading instruction; use of semantic, syntactic, and graphophonic clues; reading comprehension; and organization of reading program. Prerequisite: Admission to Fifth-Year Program. (If EDR 440, Developmental Reading I, has been taken, no credit will be given for EDR 645.)

EDR 650. Teaching Reading P-12. 3 Hours.

Understanding of reading process. Nature of reading programs; readiness motivation, methods, skills, assessment, evaluation, materials, and resources.

EDR 652. Pre and Early Reading Instruction. 3 Hours.

Theoretical bases, procedures, techniques, and materials for prereading and reading instruction. Prerequisite: Developmental reading course.

EDR 653. Literature for Grades P-12. 3 Hours.

Emphasis on needs of children, selection of books, societal issues in children's literature.

EDR 654. Assessment Evaluation and Correction Reading Diff. 3 Hours.

Observation, standardized oral and written reading tests, and informal reading inventories. Selecting learning activities based on diagnostic data. Prerequisite: Special Education majors only.

EDR 655. Reading Assessment and Evaluation. 3 Hours.

Examines evaluation techniques such as observation, standardized oral and silent reading tests and informal reading inventories such as miscue analysis.

EDR 656. Reading Strategies for Students with Reading Diff. 3 Hours.

Development and application strategies for remediating reading difficulties based on assessment and evaluation data. Prerequisite: Diagnostic reading course.

EDR 657. Supervision of Reading. 3 Hours.

Supervisor's role in improving reading instruction; methods of supervision and evaluation. Prerequisite: Permission of instructor.

EDR 659. Research and Problems in Reading. 3 Hours.

For teachers in elementary and early childhood education.

EDR 690. Internship in Reading. 1-3 Hour.

Supervised experience with children with reading difficulties.

Prerequisites: Admission to reading certification program, permission of instructor and department, and EDR 654.

EDR 691. Practicum in Reading. 3 Hours.

Practicum Prerequisite: Permission of instructor.

EDR 692. Internship in Supervision of Reading. 3-6 Hours.

Internship Prerequisites: Admission to Reading Supervisor Program, EDR 654 and 657, and permission of instructor.

Prerequisites: EDR 655 [Min Grade: C] and EDR 656 [Min Grade: C] and EDR 657 [Min Grade: C]

EDR 698. Independent Non-Thesis Research in Reading. 3 Hours.

Research Prerequisite: Permission of instructor.

EDR 701. Advanced Diagnosis and Remediation of Reading. 3 Hours.

Examination of serious reading disabilities; diagnosis, possible remediation strategies, and development; diagnosis, possible remediation strategies, and development of remediation plan in lab setting.

Prerequisites: Master's degree and M.A.-level diagnostic reading course or permission of instructor.

EDR 702. Reading: Theoretical Foundations. 3 Hours.

Relates concepts of learning, development, and linguistics to reading-learning process; emphasis on current theory; implications for program planning and classroom practice. Prerequisites: EDR 650 or permission of instructor, and master's degree.

Prerequisites: EDR 650 [Min Grade: C]

EDR 703. Advanced Research in Reading. 3 Hours.

Research Prerequisites: EDR 650 and master's degree.

Prerequisites: EDR 650 [Min Grade: C]

EDR 704. Field Experience in Reading. 3-6 Hours.

Supervised field experiences under direction of qualified reading consultant or supervisor in school setting. Prerequisites: Admission to Sixth-Year Program for Reading Teacher and permission of instructor.

EDR 705. Reading Instruction Seminar. 3 Hours.

Examination of trends and issues in field of reading. topics determined by each class. Prerequisites: Master's degree and 9 graduate hours in reading or permission of instructor.

EDR 706. Research. 1-3 Hour.

Research Prerequisites: Master's degree and permission of instructor.

EDT-Educational Technology Courses**EDT 610. Computer-Based Instructional Technologies. 3 Hours.**

Computer-Based Instructional Technologies. The first course in a series of three to familiarize classroom teachers with computer-based instruction technologies as they are applied to educational settings. Students are introduced to the historical and social context within which computer technologies are developed, as well as to the knowledge of computer hardware and software. Students will learn basic skills of microcomputer operation and applications. 3 hours.

EDT 611. Teaching/Learn with XO Laptops. 3 Hours.

Teaching and Learning With XO Laptops is a field based course, designed for teachers who teach in XO classrooms. Some sessions of the course will be conducted in the school setting. This course will cover major applications of the XO laptop and strategies to integrate the XO laptop into the K-12 school curriculum.

EDT 620. Current and Emerging Instructional Technologies. 3 Hours.**EDT 630. Curriculum Integration of Technology. 3 Hours.**

Curriculum Integration of Technology. This is the third course in a three- course series designed to provide in-service teachers with knowledge and skills in the use of computing and other new technologies. Prerequisite: EDT 610 and EDT 620. 3 hours.

EDT 660. E-Learning. 3 Hours.

This course focuses on e-learning environments. Students will develop the knowledge and skill to design effective e-learning environments and explore conceptual frameworks, various e-learning tools, and strategies.

EDU-Education Courses**EDU 500. Education as a Profession. 1 Hour.**

The purpose of this course is to prepare the alternative fifth-year candidate with some of the necessary prerequisite knowledge and skills necessary for success in his or her graduate program.

EDU 600. Education as a Profession. 1 Hour.

The purpose of this course is to prepare the prospective Teacher Education candidate with some of the necessary prerequisite knowledge and skills necessary for success in the UAB Teacher Education Program (TEP). Areas addressed in the course include: an examination of the candidate's background experiences and their influence on choosing teaching as a profession; an introduction to the UAB School of Education Conceptual Framework and Student Assessment Program; the completion of several technological proficiencies (obtaining Blazer ID/ e-mail address; sending and receiving e-mail; attaining competency in use of Blackboard and TaskStream); the development of a TEP Program Assessment Portfolio and its relationship to the UAB SOE Conceptual Framework and assessment system; and an introduction to the UAB School of Education Professional Dispositions Model.

EDU 700. Education as a Profession. 1 Hour.

The purpose of this course is to prepare the prospective Teacher Education candidate with some of the necessary prerequisite knowledge and skills necessary for success in the UAB Teacher Education Program (TEP). Areas addressed in the course include: an examination of the candidate's background experiences and their influence on choosing teaching as a profession; an introduction to the UAB School of Education Conceptual Framework and Student Assessment Program; the completion of several technological proficiencies (obtaining Blazer ID/ e-mail address; sending and receiving e-mail; attaining competency in use of Blackboard and TaskStream); the development of a TEP Program Assessment Portfolio and its relationship to the UAB SOE Conceptual Framework and assessment system; and an introduction to the UAB School of Education Professional Dispositions Model.

EE-Electrical Computer Egr Courses**EE 511. Facilities Engineering. 3 Hours.**

General engineering project planning, applying codes and standards, preliminary design, economic forecasting, environmental planning/ reports, site selection, population displacement, cash flow, specifications and plans.

EE 518. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video, coding, and wireless computer networks. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 523. Digital Signal Processing. 3 Hours.

Digital filter analysis and design. FET algorithms. Applications of DSPs in engineering problems such as data acquisition, control, and I/O. Lecture and computer laboratory. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 526. Control Systems. 3 Hours.

Theory of linear, continuous-feedback control systems using complex frequency techniques. Block diagram manipulation, performance measures, stability, root locus, construction and locating roots (positive and negative feedback), gain adjustment, and altering dynamic properties. Discrete transforms using z-transform and z-plane root locus.

EE 527. Industrial Control. 3 Hours.

Power control devices and applications. Relay logic and translation to other forms. Analog and digital computers. Proportional-integral-derivative(PID) control techniques. Modern laboratory instrumentation and man-machine interface software. Lecture and laboratory. EE 233 (Engineering Programming Method), EE 318 (Methods of System Analysis), and EE 351 (Electronics) are prerequisites for this course.

EE 531. Analog Integrated Electronics. 4 Hours.

Advanced analysis and design using op-amps, with emphasis on error analysis and compensation. Applications include signal conditioning for instrumentation, instrumentation amplifiers, nonlinear and computational circuits, Butterworth and Chebyshev filter design, power amplifier design, voltage regulator design, and oscillators. A-to-D and D-to-A conversion methods. Laboratory exercises emphasizing design techniques. EE 351 (Electronics) is a prerequisite for this course. EE 318 (Methods of System Analysis) is a prerequisite or may be taken concurrently with the course.

EE 532. Introduction to Computer Networking. 3 Hours.

Introduction to computer networking and engineering standards related networking. Network hardware, Ethernet, token ring, ISDN, ATM, networking protocols including TCP/IP protocol suite, Internetworking, LANS, and typical applications. EE 134 (Engineering Computer Methods) and a grade of C or better in EE 210 (Digital Logic) are prerequisites for this course.

EE 533. Engineering Software Solutions. 3 Hours.

Project planning, specification, design, implementation and testing of software solutions for engineers. Waterfall model of development and agile development methods will be covered. Lecture and computer laboratory. Four projects. EE 333 (Engineering Programming using Objects) is a prerequisite for this course.

EE 537. Microprocessor Applications. 3 Hours.

Applications of microprocessors in engineering problems such as data acquisitions control, and real-time input/output.

EE 538. Intermediate Microprocessors. 3 Hours.

Advanced microprocessor topics including cache design, pipelining, superscalar architecture, design of control units, microcoding, and parallel processors. Comparison of advanced, contemporary microprocessors from Intel and IBM. EE 337 (Introduction to Microprocessors) is a prerequisite for this course.

EE 542. Computer Networking Protocols. 3 Hours.

Hands-on laboratory course covering topics in networking. TCP/IP, routing, LAN configurations, Windows and Linux configurations, protocol analysis.

EE 543. Medical Imaging Processing. 3 Hours.

A lab-based introduction to processing analysis and display techniques for medical imaging.

EE 544. Real-Time Process & Protocols. 3 Hours.

Hands-on laboratory course covering topics in real-time computer systems such as algorithms, state-machine implementations, communication protocols, instrumentation, hardware interfaces, multitasking, and interrupt handling.

EE 546. Industrial Control Projects for Information Age. 3 Hours.

In-depth group and individual projects in industrial control with emphasis on information systems applications. Projects in areas such as programmable logic controllers, distributed control systems, factory automation, man-machine interface software and hardware, intelligent control, real-time systems, database applications and distributed computing. Lecture and laboratory.

EE 547. Internet/Intranet Application Development. 3 Hours.

Focus on the development of applications and models using Internet/Intranet Technologies such as Java, JavaScript, Conferencing systems, Dynamic HTML, server side scripting, multi-tier models and XML. Lecture and computer laboratory. EE 233 (Engineering Programming Method) is a prerequisite for this course.

EE 548. Software Engineering Projects. 3 Hours.

Builds on the Object-Oriented concepts covered in EE 333. Coverage for Unified Modeling Language is expanded and design patterns are incorporated. Provides a project environment for implementation of systems using Object Oriented techniques. EE 333 (Engineering Programming using Objects) is a prerequisite for this course.

EE 551. Digital Electronics. 3 Hours.

Basics of semiconductor physics and switching behavior of bipolar and MOS transistors. Properties of CMOS, TTL, and ECL logic families. Semiconductor memory. IC fabrication. State machine and large-scale project techniques. Manual layout of small ICs using LSI Edit. Laboratory involves measuring device characteristics and designing and implementing several types of sequential circuits. EE 337 (Introduction to Microprocessors) is a prerequisite for this course.

EE 552. VHDL Digital Systems Design. 3 Hours.

Computer Design Automation using VHDL. Architectural, behavioral and logical descriptions of digital systems. Logic verification and simulation. Projects involve designing complex integrated circuits using modern DA tools. Lecture and laboratory. EE 337 (Introduction to Microprocessors) is a prerequisite for this course.

EE 558. Medical Instrumentation. 3 Hours.

Fundamental operating principles, applications and design of electronic instrumentation used in measurement of physiological parameters. Class design project. EE 351 (Electronics) is a prerequisite for this course.

EE 561. Machinery II. 3 Hours.

Physical principles of DC machines. Mathematical analysis of generator designs using equivalent circuits and magnetization curves. Calculation of motor speed, torque, power, efficiency, and starting requirements. Solid-state speed control systems. EE 361 (Machinery I) is a prerequisite for this course.

EE 571. Power Systems I. 3 Hours.

Components of power systems. Performance of modern interconnected power system under normal and abnormal conditions. Calculation of inductive and capacitive reactances of three-phase transmission lines in steady state. EE 351 (Electronics) is a prerequisite for this course.

EE 572. Power Systems II. 3 Hours.

Modeling of generators, transformers, and transmission lines for system studies. Introduction to symmetrical components. Calculation of short-circuit currents due to balanced and unbalanced faults. Determination of interrupting ratings of circuit breakers. Transient stability of power systems. Derivation of swing equation and solution by numerical method. Equal area criterion. Power system design project required.

EE 573. Protective Relaying of Power Systems. 3 Hours.

Operating principles of protective relays. Protection of transmission lines, generators, motors, transformers, and buses.

EE 574. Industrial Power Systems. 3 Hours.

One-line diagrams/load analysis. Medium and low voltage feeder design, voltage regulation, and short-circuit analysis. Selection of protective devices. Grounding and lightning protection. Term project.

EE 585. Engineering Operations. 3 Hours.

Economic, procedural, planning, and control aspects of engineering projects.

EE 590. Special Topics in (Area). 1-6 Hour.**EE 591. Special Problems in (Area). 1-6 Hour.**

Topic assigned with course.

EE 601. Electrical and Computer Engineering Seminar. 1-3 Hour.

Consists of research presentations and colloquia delivered by faculty, research assistants, and invited guests in various state-of-the-art and popular topics related to Electrical and Computer Engineering. Maximum of 3.0 credit hours applicable toward MSEE degree.

EE 610. Technical Communication for Engineers. 3 Hours.

A workshop-oriented course providing students with the opportunity to produce technical memoranda, a proposal, and a conference and/or refereed- journal paper and to make oral presentations related to these work productsutilizing appropriate software presentation aids. Successful performance on a written pre-test required.

EE 621. Random Variables and Processes. 3 Hours.

Theory underlying analysis and design of communication, stochastic control, data gathering, and data analysis systems. EE 421 (Communication Systems) is a prerequisite for this course.

EE 622. Advanced Communication Theory. 3 Hours.

Analysis of performance of analog modulation techniques in presence of noise. EE 421 (Communication Systems) is also a prerequisite for this course.

EE 624. Digital Communications. 3 Hours.

Design of digital communications systems.

EE 625. Information Theory and Coding. 3 Hours.

Channel models and block codes, block code ensemble performance analysis, convolutional codes and ensemble performance, sequential decoding of convolutional codes.

EE 626. Digital Image Processing. 3 Hours.

Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 627. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EE 628. Telecommunications I. 3 Hours.

Advanced topics.

EE 629. Telecommunications II. 3 Hours.

Advanced Topics.

EE 632. Introduction to Computer Networking. 3 Hours.

Computer networking fundamentals. Layered network model and correspondence to real systems. Discussion of Ethernet, Token Ring, TCP/IP, LAN, and other protocols. Exploration of the Internet and similar systems. Network application models. Simulation of networks. EE 333 (Engineering Programming using Objects) and a grade of C or better in EE 210 (Digital Logic) are prerequisites of this course.

EE 633. Experiments in Computer Networking. 3 Hours.

Detailed exploration of particular issues in network protocols and network application models. Development of series of programs to explore the details of network protocols and network application models.

EE 634. Introduction to Neural Networks. 3 Hours.

Neural network topologies and learning algorithms with an emphasis on back propagation. Applications and limitations of networks. Designing networks for specific uses. Individual software project. A grade of C or better in EE 210 (Digital Logic) is required for this course.

EE 635. Telecommunication Systems. 3 Hours.

System organization and structure; data transmission.

EE 636. Advanced Digital Design. 3 Hours.

Large-scale class project. Sample topics include math coprocessors, text coprocessors, CRT controllers, and data encryption devices.

EE 639. Advanced Microprocessors. 3 Hours.

Topics covering both hardware and software issues. Individual or group term project.

EE 640. Object-Oriented Design. 3 Hours.

Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using an object-oriented language. A grade of C or better in EE 333 (Engineering Programming using Objects) or other software design experience using C is required for this course.

EE 641. Modern Control Theory. 3 Hours.

State variable models for discrete-time systems. Sampled-data systems. State feedback and pole placement. State estimation. EE 426 (Control Systems) is a prerequisite for this course.

EE 642. Intelligent Systems. 3 Hours.

Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control.

EE 650. Software Engineering. 3 Hours.

Introduces classical software lifecycles and software development paradigms. Provides state-of-the-art practical experience in proposal development and software design. Develops integrated skills drawing experience from computer engineering, computer science, communication, systems engineering, and problem solving.

EE 651. Software Engineering Large Systems - I. 3 Hours.

Introduces advanced integrated software systems development paradigms. Notions of process and integrated system iews are extensively covered. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and Programming.

EE 652. Software Engineering Large Systems - II. 3 Hours.

Builds on the advanced integrated software systems development paradigms covered in EE 651/751. Components are introduced as elements of large system implementations. In the context of a design taxonomy, advanced Object Oriented design and development techniques are reviewed.

EE 653. Electronic Power Switching Circuits. 3 Hours.

Power semiconductor devices. Switching circuit analysis, AC voltage controllers, controlled rectifiers, DC-to-DC converters, inverters, and cyclo-converters. EE 351 (Electronics) is a prerequisite for this course.

EE 654. Advanced Electronics with Industrial Applications. 3 Hours.

Phase-lock loops, servos ICs, programmable filters, linear power devices, and implications of various construction practices. Laboratory experiments. EE 351 (Electronics) is a prerequisite for this course.

EE 656. Introduction to Automation and Robotics. 3 Hours.

Automation mechanisms examined from geometrical, component, control, and application viewpoints. Individual term project with oral report required.

EE 657. Enterprise Information Architecture Engineering. 3 Hours.

Study and practice of the enterprise architecture engineering for developing multi-tiered enterprise level systems. Methodologies for design and implementation of large-scale information systems. Distributed computing, clients, servers, operating systems, databases are covered.

EE 661. Advanced Synchronous Machines. 3 Hours.

Effects of synchronous machine design on generated voltage and harmonics. Time domain modeling and simulation of machine dynamics for transient stability analysis.

EE 662. Advanced Induction Machines. 3 Hours.

Time domain modeling of induction machines. Simulation of induction machine dynamics including motor starting transients.

EE 663. Control of Synchronous Machines. 3 Hours.**EE 671. Computer Applications in Power Systems. 3 Hours.**

Analysis of power systems operation.

EE 672. Power System Overvoltages. 3 Hours.

Events causing overvoltages, and protection of system.

EE 673. Reliability of Power Systems. 3 Hours.

Component reliability using standard industrial techniques.

EE 674. Economic Operation and Control of Power Systems. 3 Hours.

Economic control of thermal generating stations and hydrothermal stations. Computer control of power systems.

EE 682. Electromagnetic Field Theory I. 3 Hours.

Application of Maxwell's equations to problems of electrical engineering; boundary-value problems, wave propagation, waveguides, radiation, and scattering; and surface waves.

EE 683. Complex Frequency Techniques in Process Control. 3 Hours.

S-plane techniques; characterization of processes; design of controllers.

EE 684. Engineering Management of Information Resources. 3 Hours.

Management of the engineering of information systems. Management of information and critical information. Managing information intensive change, global information technology management. Quality control. Information flow and use. Information process and improvement. Image transfer, control and management.

EE 685. Engineering Management of Information Resources. 3 Hours.

Management of the engineering of information systems. Management of information and critical information. Managing information intensive change, global information technology management. Quality control. Information flow and use. Information process and improvement. Image transfer, control, and management.

EE 686. Technical Entrepreneurship I. 3 Hours.

First of two-course sequence. Includes lectures on entrepreneurship, intra-preneurship, strategic planning, finance, marketing, sales, operations, research and development, manufacturing, and management of technology-based companies. Management teams are formed and ventures are selected. These ventures are simulated over an extended period of time. Extensive student presentations and reports required.

EE 687. Technical Entrepreneurship II. 3 Hours.

EE 687 is the second of a two-course sequence, a continuation of EE 686. It includes lectures on entrepreneurship, intrapreneurship, strategic planning, finance, marketing, sales, operations, research and development, manufacturing, and management of technology-based companies. Management teams are formed and ventures are selected. These ventures are simulated over an extended period of times. Extensive student presentations and reports are required.

Prerequisites: EE 686 [Min Grade: C]

EE 688. Enterprise Perspectives in Information Engineering. 3 Hours.

Technology entrepreneurship, business processes, measurement of information systems effectiveness and productivity, building a responsive information infrastructure. Business system analysis, design, and process redesign. Reengineering and information systems evolution. Electronic commerce technical design. Legal considerations and governmental regulations and requirements. Ethics. Information system engineering.

EE 690. Special Topics in (Area). 1-6 Hour.

Special Topics in (Area).

EE 691. Special Problems in (Area). 1-6 Hour.

Special Problems in (Area).

EE 697. Graduate Project. 3 Hours.

Graduate project for Plan II Masters students.

EE 698. Non-Thesis Research. 1-12 Hour.

Non-Thesis Research.

EE 699. Thesis Research. 1-12 Hour.

Master's Degree Thesis.

Prerequisites: GAC M

EE 701. Electr & Comptr EGR Sem. 1-3 Hour.

Consists of research presentations and colloquia delivered by faculty, research assistants, and invited guests in various state-of-the-art and popular topics related to Electrical and Computer Engineering. Maximum of 3.0 credit hours applicable toward MSEE degree.

EE 724. Digital Communications. 3 Hours.

Design of digital communications systems.

EE 725. Information Theory and Coding. 3 Hours.

Channel models and block codes; block code ensemble performance analysis; convolutional codes and ensemble performance; sequential decoding of convolutional codes.

EE 726. Digital Image Processing. 3 Hours.

Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 727. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EE 728. Telecommunications I. 3 Hours.

Advanced topics.

EE 729. Telecommunications II. 3 Hours.

Advanced Topics.

EE 732. Introduction to Computer Networking. 3 Hours.

Computer network fundamentals. Layered network OSI model and correspondence to real systems. Discussion of Ethernet, Token Ring, TCP/IP, LAN, and other protocols. Exploration of the Internet and similar systems. Network application models. Simulation of networks. EE 210 (Digital Logic) and EE 337 (Introduction to Microprocessors) are prerequisites for this course.

EE 733. Experiments in Computer Networking. 3 Hours.

Detailed exploration of particular issues in network protocols and network application models. Development of series of programs to explore the details of network protocols and network application models.

EE 734. Introduction to Neural Networks. 3 Hours.

Neural network topologies and learning algorithms with an emphasis on back propagation. Applications and limitations of networks. Designing networks for specific uses. Individual software project. EE 426 (Control Systems) and a grade of C or better in EE 210 (Digital Logic) are prerequisites for this course.

EE 740. Object-Oriented Design. 3 Hours.

Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using an object-oriented language. Requires a knowledge of software design experience using C.

EE 742. Intelligent Systems. 3 Hours.

Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control.

EE 746. Batch Control. 3 Hours.

Theory, analysis, and synthesis of batch processing control systems.

EE 747. Distributed Control Systems. 3 Hours.

Application of distributed control to process, integration, and operator interfaces.

EE 748. Process Analyzers. 3 Hours.

Automated analytical techniques for identifying chemical process streams.

EE 750. Software Engineering. 3 Hours.

Introduces classical software lifecycles and software development paradigm. Provides state-of-the-art practical experience in proposal development and software systems design. Develops integrated skills drawing experience from computer engineering, computer science, communication, system engineering, and problem solving.

EE 751. Software Engineering Large Systems - I. 3 Hours.

Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views are extensively covered. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and Programming.

EE 752. Software Engineering Large Systems - II. 3 Hours.

Builds on the advanced integrated software systems development paradigms covered in EE 651/751. Components are introduced as elements of large system implementations. In the context of a design taxonomy, advanced Object Oriented design and development techniques are reviewed.

EE 757. Enterprise Information Architecture Engineering. 3 Hours.

Study and practice of the enterprise architecture engineering for developing multi-tiered enterprise level systems. Methodologies for design and implementation of large-scale information systems. Distributed computing, clients, servers, operating systems, databases are covered.

EE 761. Advanced Synchronous Machines. 3 Hours.

Effects of synchronous machine design on generated voltage and harmonics. Time domain modeling and simulation of machine dynamics for transient stability analysis.

EE 762. Advanced Induction Machines. 3 Hours.

Time domain modeling of induction machines. Simulation of induction machine dynamics including motor starting transients.

EE 763. Control of Synchronous Machines. 3 Hours.**EE 771. Computer Applications in Power Systems. 3 Hours.**

Analysis of power systems operation.

EE 772. Power System Overvoltages. 3 Hours.

Events causing overvoltages, and protection of system.

EE 773. Reliability of Power Systems. 3 Hours.

Component reliability using standard industrial techniques.

EE 774. Economic Operation and Control of Power Systems. 3 Hours.

Economic control and operation of thermal generating stations and hydrothermal stations. Computer control of power systems.

EE 782. Multivariable Systems. 3 Hours.

Analysis and design of multiple-output, multiple-input control systems.

EE 785. Engineering Management of Information Resources. 3 Hours.

Management of the engineering of information systems. Management of information and critical information. Managing information intensive change, global information technology management. Quality control. Information flow and use. Information process and improvement. Image transfer, control, and management.

EE 788. Enterprise Perspectives in Information Engineering. 3 Hours.

Technology entrepreneurship, business processes, measurement of information systems effectiveness and productivity, building a responsive information infrastructure. Business system analysis, design, and process redesign. Reengineering and information systems evolution. Electronic commerce technical design. Legal considerations and governmental regulations and requirements. Ethics. Information system engineering.

EE 790. Special Topics in (Area). 1-6 Hour.

Special Topics In (Area).

EE 791. Individual Study in (Area). 1-6 Hour.

Individual Study In (Area).

EE 798. Non-Dissertation Research. 1-12 Hour.

Non-Dissertation Research.

EE 799. Dissertation Research. 1-12 Hour.

Doctoral Dissertation Research.

Prerequisites: GAC D

EEC-Elem Early Childhood Courses**EEC 500. Pedagogy One. 9 Hours.**

Develops candidate's knowledge, skills/performance, and dispositions in the teaching of reading and language arts in the early childhood and elementary classroom. Refines abilities in instructional planning, instructional delivery, classroom management, and assessment of learners in order to address the literacy needs of diverse learners.

EEC 501. Pedagogy Two. 9 Hours.

Curriculum and field experience of P-6 curriculum in the areas of math, science, literacy, and social studies. Emphasis is placed on the scope, sequence, and content of each content area. Extensive field experience required.

EEC 502. Primary Math Methods. 3,4 Hours.

Materials and methods on emergent numeracy. Field experience required. Prerequisites: Admission to 5th year program.

EEC 505. Children s Literature in Elem. and Early Childhood. 3 Hours.

Materials and methods. Needs of children, selection of books, societal issues in children s literature, and role of media in children s literature. Field experiences required. Admission to 5th-Year Program, EEC 600, EEC 610, EEC 660.

Prerequisites: EEC 660 [Min Grade: C] and EDU 500 [Min Grade: C]

EEC 506. Language Arts in Elementary and Early Childhood Ed.. 1-4 Hour.

Materials and methods. Communication-based approach in developing effective language arts program. All aspects of language arts program addressed. Field experiences required. Prerequisites: Admission to 5th-Year Program, EEC 600, EEC 610, EEC 660.

Prerequisites: EEC 660 [Min Grade: C] and EDU 500 [Min Grade: C]

EEC 512. Math in EC and Elementary Educ. 3,4 Hours.

Material and methods of teaching mathematics. Emphasizes scope, sequence, and content of the mathematics program. Computation skills and problem solving are stressed. Includes field experiences. Prerequisite: Admission to 5th-Year Program, EEC 505, EEC 506, EEC 515.

Prerequisites: EEC 610 [Min Grade: C]

EEC 513. Science in EC and Elem Edu. 3,4 Hours.

Scope, sequence, materials, and methods. Emphasis on teaching and the development of content and process skills. Field experiences completed in conjunction with practicum. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 610 [Min Grade: C]

EEC 514. Soc Studies in EC and Elem Edu. 3,4 Hours.

Scope, sequence, and content of elementary school social studies curriculum. Teaching strategies, program articulation, and instructional planning. Field experiences completed in conjunction with practicum. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 610 [Min Grade: C]

EEC 515. Learning Environments. 3 Hours.

Theoretical approaches that focus on child centered curriculum, classroom management, discipline strategies and cultural, linguistic, and developmentally appropriate instruction. Field experience required. Admission to Alternative Master's Program required.

EEC 540. Advanced Workshop in Education. 1-3 Hour.

May be repeated for total of 9 hours with various topics.

EEC 560. Current Issues in Education. 3 Hours.

Topics announced in class schedule. May be repeated for maximum of 6 hours with different topics.

EEC 565. Teaching Globe and Map Skills. 3 Hours.

Concepts and skills related to understanding functional use of globes and maps. Teaching strategies and methodologies for teaching concepts and skills. Curriculum scope, sequence, continuity, and application within social studies program.

EEC 592. Individual Curriculum Projects:(Area Specified). 3-6 Hours.

Field projects in curriculum modification and improvement of classroom practice. Prerequisite: Permission of instructor.

EEC 593. Individual Readings. 1-3 Hour.

Individualized readings on special topics. Prerequisite: Permission of instructor.

EEC 594. Field Work in Elementary and Early Childhood Ed.. 1-6 Hour.

Observation and participation experiences with children. Prerequisite: Permission of instructor.

EEC 600. Transition into P-6 Teaching. 3 Hours.

Introduction to the teaching profession (Alternative Master's Program, Elementary/Early Childhood Education).

EEC 610. Curriculum Development in ELEM and ECE. 3 Hours.

Curriculum decisions, planning and implementation.

Prerequisites: EEC 660 [Min Grade: C]

EEC 611. Teacher Roles in Elementary and Early Childhood Ed.. 3 Hours.

Models of instructional roles such as facilitator, program planner, curriculum designer; models of social roles. Includes practicum experiences.

EEC 612. Models of Teaching. 3 Hours.

Selecting and applying specific teaching strategies. Includes practicum experiences.

EEC 620. Teaching Mathematics N-6. 3 Hours.

Issues and approaches in early childhood and elementary mathematics; research and implementation for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 621. Teaching Language Arts P-12. 3 Hours.

Issues and approaches in teaching early childhood and elementary school language arts. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 622. Teaching Social Studies N-6. 3 Hours.

Function and organization of social studies programs in early childhood and elementary schools. Selection and adaptation of content, resources, teaching materials, and teaching strategies/methods with emphasis on current trends.

Prerequisites: EEC 660 [Min Grade: C]

EEC 623. Teaching Science N-6. 3 Hours.

Issues and approaches in early childhood and elementary science. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 625. Critical Pedagogy P-6 Education. 3 Hours.

Encompasses current issues in education from critical, postmodern, and feminist perspectives. Issues of equity, social justice, racism, sexism, and the marginalization of minorities in education will be explored. Admission to Graduate School required.

Prerequisites: EEC 660 [Min Grade: C]

EEC 628. Masters Project. 1 Hour.

Designed for the nontraditional 5th-year student in early childhood and elementary education. This one-hour seminar must be taken concurrently with the student's internship experience.

EEC 632. Advanced Children s Literature. 3 Hours.

Designed to explore literature for preschool, kindergarten, and primary- and intermediate-level children. Selection, use, and integration of literature throughout the total curriculum is stressed. Prerequisites: Admission to Graduate School or permission of the instructor.

EEC 650. Systematic Reflections About Teaching. 3 Hours.

Theory and practice of reflective inquiry in the elementary classroom which includes observations, data collection, analysis, and narrative reporting. Prerequisite: Admission into Graduate School.

EEC 660. Reading in Teaching and Learning. 3 Hours.

Introductory course is designed to assist the student in locating, analyzing, and synthesizing current research in early childhood and elementary education.

EEC 670. Studying the Child in School. 3 Hours.

Analysis of child study in school; values and limitations of assessment.

EEC 671. Creative and Affective Experiences. 3 Hours.

Nature and nurture of creativity through creative learning experiences. Maintaining and preserving creative expression throughout curriculum.

EEC 672. Piaget and Perspectives in Learning. 3 Hours.

Piaget's theory of intellectual or cognitive development; applications to elementary and early childhood education. Prerequisite: Course in human growth and development.

EEC 673. Teaching in Multi-Cultural Soc. 3 Hours.

Examination of the implications of cultural pluralism for teaching. The course is designed to introduce students to the goals, principles, and practices of multicultural education.

EEC 674. Language Development. 3 Hours.

Developmental processes involved in language, relationship to education programs.

EEC 675. Teaching in the Urban School. 3 Hours.

Methods and materials; evaluation of school and school-related programs for equalizing educational opportunity.

EEC 676. Discipline and Social Education. 3 Hours.**EEC 677. Readiness for Learning. 3 Hours.**

Preschool and primary level language development and literacy development; assessment techniques.

EEC 678. Primary Mathematics: A Constructive Approach. 3 Hours.

New ways of teaching primary math based on Piaget's theory about how children acquire logico-mathematical knowledge.

EEC 680. National Board Portfolio. 3-6 Hours.

Prepares teachers for National Board Candidacy and to support candidates as they go through the certification process. Students enrolled in this course may be either precandidates or candidates for National Board Certification. Prerequisites: Admission to Graduate School and permission of candidate's advisor and course instructor.

EEC 690. Internship in P-3/3-6. 3-9 Hours.

Supervised teaching in an early childhood (P-3) and an elementary (3-6) program. The student gradually assumes responsibility for planning and teaching for the entire class (minimum of 15 weeks). The internship experience includes supervision in working with professional resource professionals and parents. Approval of application for Internship in P-3/3-6 required.

Prerequisites: EDR 540 [Min Grade: C] and EEC 505 [Min Grade: C] and EEC 506 [Min Grade: C]

EEC 691. Practicum in ECE/ELEM. 3 Hours.

Practicum in Early Childhood Education and Elementary Education. Prerequisite: Permission of instructor.

EEC 692. Curriculum Projects. 3-6 Hours.

Field projects in curriculum modifications and improvement of classroom practice. Prerequisite: Permission of instructor.

EEC 693. Independent Studies. 1-3 Hour.

Prerequisite: Permission of instructor as independent study.

EEC 694. Field Study. 1-6 Hour.

Field study Prerequisite: Permission of instructor.

EEC 695. Practicum Supervision in ECE/ELE. 2 Hours.

Supervision of practicum students. Prerequisite: Permission of instructor or advisor.

EEC 696. Internship Seminar. 2 Hours.

Course will accompany the 9 semester hour internship (EEC 690) to support and extend the efforts of student teaching. The course will focus on problem-solving related to classroom situations such as classroom management, grading, professionalism and ethics, legal issues, teacher rights, and others that occur during the internship. It will be taught in a seminar style with once-a-week required meetings.

EEC 698. Independent Non-Thesis Research. 3 Hours.

Non Thesis research Prerequisite: Permission of instructor.

EEC 699. Thesis Research. 6-9 Hours.

Thesis research Prerequisites: Admission to candidacy and permission of instructor.

Prerequisites: GAC M

EEC 701. Advanced Seminar in Language Development. 3 Hours.

Relationship of thinking and knowing to language development; strategies for analysis. Prerequisites: EEC 674 or equivalent and master's degree.

Prerequisites: EEC 674 [Min Grade: C]

EEC 702. Administration and Supervision Prog Young Children. 3 Hours.

Evaluation, decision making, supportive services, staff development, community interaction strategies. Prerequisite: Master's degree.

EEC 710. Research. 1-3 Hour.

Research. Prerequisite: Permission of instructor.

EESL-English as Second Language Courses**EESL 610. Second Language Acquisition. 3 Hours.**

An in-depth look at major theories of second language acquisition. Exploration of learning environments, programs, home language, culture, and other factors that influence second language acquisition.

EESL 613. Teaching ESL in a Multicultural Society. 3 Hours.

Designed to introduce students to the goals, principles, and practices of multicultural education and to sensitize students to cultural pluralism in the United States.

EESL 615. Grammar for ESL Teachers. 3 Hours.

A critical study of aspects of Modern English grammar important for the teaching of English as a Second or Foreign Language. Students will gain an understanding of the major syntactic and semantic phenomena important for teaching ESL/EFL, become familiar with the practical and theoretical literature on teaching English grammar, participate in practical exercises of grammar correction in writing with actual ESL students, and develop and compile classroom activities for teaching points of grammar.

EESL 617. Teaching English in a Global Context. 3 Hours.

Provides a sociolinguistic perspective on the globalization of English and on the emergence and teaching of English as an International Language. Students explore dialectology, language change, language diversity, language ideology and power, national language policies, World Englishes, the growing number of non-native English speakers, and attitudes of native and non-native English speakers toward the domination of English.

EESL 620. Special Topics in ESL. 3 Hours.

Overview of institutional structures that support new language learners, curriculum and teaching accommodations supported by second language acquisition theory, support networks, and legal issues.

Prerequisites: EESL 610 [Min Grade: C]

EESL 625. Phonology for Second Language Teachers. 3 Hours.

An introduction to phonology and its application to the teaching of a second or foreign language. Students learn the phonological structure of the English language, analyze examples from language learner data, diagnose pronunciation difficulties experienced by language learners from different first languages, and identify instructional strategies for assisting language learners to perceive and produce challenging sounds.

Prerequisites: EESL 610 [Min Grade: C]

EESL 627. Teaching Adult Language Learners. 3 Hours.

Introduces goals, principles, and practices for teaching English to adult learners, addresses the influence of varying backgrounds on adult language learning, and examines ways to evaluate adults' second language development. After learning to recognize quality components in distinct program models, as outlined by TESOL Standards for Adult Education ESL Programs, students do a critical study of community-based programs and English for Specific Purposes.

EESL 630. Methods and Materials of Teaching ESL. 3 Hours.

Examines traditional and current approaches to teaching English to speakers of other languages and curriculum materials, texts, and other resources.

Prerequisites: EESL 610 [Min Grade: C]

EESL 637. Methods Teaching English as an International Language. 3 Hours.

Prepares students to teach English as an International Language by using methods, strategies, and techniques appropriate for adults in ESL contexts and for all learners in EFL contexts. Engaged with approaches aligned with TESOL Standards for ESL/EFL Teachers of Adults, students plan state-of-the-art curriculum, instruction and assessment for 5 program settings: adult/community, workplace, college/university, intensive English, and English as a Foreign Language.

EESL 640. Teaching ESL Through Reading and Writing. 3 Hours.

Theory, research and practice in reading and writing for second language learners. Implications for teaching reading and writing skills that allow second language learners to participate in the full range of academic situations. Prerequisite: EESL 610.

Prerequisites: EESL 610 [Min Grade: C]

EESL 647. Teaching New Languages Through Reading and Writing. 3 Hours.

Addresses linguistic, sociocultural, psychological, and educational factors that affect literacy development of English as an additional language. Grounded in theoretical and practical aspects of teaching second language (L2) reading and writing to adolescents and adults in diverse communities, students learn to implement effective instructional strategies for promoting literacy in English as an additional language. To measure attainment of L2 reading and writing skills, students learn to design and conduct authentic assessments and to administer standardized assessments.

Prerequisites: EESL 610 [Min Grade: C]

EESL 650. Strategies for Teaching Math and Science to ELLs. 3 Hours.

Provides knowledge and strategies for making math and science accessible to ELLs at all grade levels, K-12. Classroom teachers will learn to make accommodations for teaching ELLs within a sheltered instruction framework.

EESL 657. Instruction and Assessment: Listening and Speaking. 3 Hours.

Examines how spoken communication is structured so that it is socially appropriate and linguistically accurate. Students learn principles and best practices for the contextualized teaching of second language (L2) listening and speaking skills to adolescent and adult learners. After exploring the purposes, types, and availability of formal testing tools to assess the attainment of these skills in English as an additional language, students also learn to generate and conduct their own tests for assessing L2 listening and speaking.

Prerequisites: EESL 610 [Min Grade: C]

EESL 660. Research in ESL. 3 Hours.

Primary types of research conducted in second language teaching and learning and how these methods can be used to inform teaching. Introduction to classroom-based second language research approaches.

EESL 687. Practicum Seminar: Adult English Language Teaching. 3 Hours.

This inquiry-focused course guides emerging teachers in experiencing the differentiated facets of working in adult ESL and EFL environments. Students explore issues related to Intensive English Programs, English for Occupational Purposes, Program Administration, and English as an International Language. Students observe classes in regional IEPs, develop an EOP program, receive hands-on experience in administration, apply research to various adult EIL teaching situations, and do an in-depth study of an EFL context.

Prerequisites: EESL 610 [Min Grade: C]

EESL 689. Internship Seminar in ESL. 1 Hour.

Provides an opportunity to explore in-depth effective ways to deliver instruction during the internship experience. It must be taken concurrently with EESL 690 (9). Approval of internship application.

Prerequisites: EESL 610 [Min Grade: C]

EESL 690. Internship in Second and Foreign Languages, N-12. 3-9 Hours.

Meets the internship requirements of the state code. Interns are engaged in the full scope of teaching activities including planning and delivering lessons, evaluating students, and conducting managerial tasks and other appropriate duties. Prerequisite: Approval of internship application.

EESL 697. ESL Practicum: Adult Learners. 3 Hours.

A standards-based course offering practical application of the knowledge and skills learned in other courses for teaching ESL to adult language learners. After doing structured observations of professional ESL educators and participating in the corresponding debriefings, novice teachers engage in the full scope of ESL teaching activities. They plan and deliver lessons, evaluate learners and their language development, and conduct managerial tasks and other appropriate duties. Prerequisite: Approval of practicum application.

EFL-Foreign Language Educ Courses**EFL 585. Teaching Strategy Foreign Lang. 3-4 Hours.**

Approaches and methods of teaching and testing foreign language. Selection and use of audiovisual equipment and materials. Structured school observations.

EFL 598. Stud Teaching Foreign Lang N-12. 3-9 Hours.

Supervised teaching in foreign languages (N-12). Approval of application for student teaching required.

EFL 691. N-12 Foreign Language Internship. 3-9 Hours.

Supervised foreign language teaching in elementary and secondary schools. Approval of application for internship required.

EGR-Engineering Courses**EGR 500. Special Topics in (Study Away). 9 Hours.**

Independent studies in various subject and/or service areas outside the state of Alabama or the continental United States.

EGR 510. ESL in Education. 1-6 Hour.

Course provides students an opportunity to help students in K-12 to analyze and solve problems using engineering concepts and design process to engage and excite them about engineering, science, and technology.

EGR 520. EiSAL. 6 Hours.

This course will allow engineering students the opportunity to communicate and live in other cultural environments allowing them to share interdisciplinary engineering design and analysis in a real-world setting. It will also allow them the opportunity to work in multi-cultural groups to solve a common problem.

EGR 540. Social Responsibility. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham.

EGR 541. Interprof Collaboration. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners.

EGR 542. Interprofessional Project Plan. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the global health service learning program at the University of Alabama at Birmingham.

EGR 550. ESL: Teaching Experiences. 1 Hour.

This course provides engineering students the opportunity to assist engineering faculty and students in a tutorial environment by serving as teaching assistants in engineering service courses.

EGR 590. Special Topics. 6 Hours.**EGR 601. ASEM Seminar. 0 Hours.**

Seminar focusing on student research and guest presentations of various topics of interest to safety and risk management engineers and personnel.

EGR 610. Introduction to System Safety - Prevention through Design. 3 Hours.

Best practice in any business sector requires the pursuit of a triple bottom line – protecting people, planet, and profit. This course provides an overview of system safety in general and Prevention through Design in particular and explores their efficacy in helping companies achieve a bottom line that is socially, environmentally, and financially rewarding. Topics of inquiry include the processes of hazard analysis and risk assessment, the concept of "acceptable" risk, the safety decision hierarchy of controls, safety standards (the mandatory minimum vs. the voluntary best practice), safety as a cost control strategy, and the critical elements of a comprehensive, advanced safety program. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour online forum is required. The EGR 610 forum is typically held on Sunday from 1:30-3:00 CDT. EGR 610 must be taken during the first semester.

EGR 611. Hazard Analysis & Waste Elimination. 3 Hours.

Hazards have the potential to cause harm to people, planet, and profits. Hazard analysis is a process that begins with the identification of a hazard and proceeds into an estimate of the severity of harm or damage that could result if the potential is realized and a hazard-related incident occurs (ASSE TR-Z790.001 – 2009). This course examines engineering techniques utilized to systematically and logically identify and analyze hazards in the workplace. These techniques include preliminary hazard list (PHL), preliminary hazard analysis (PHA), system hazard analysis (SHA), subsystem hazard analysis (SSHA) and others. Students work in teams to use these techniques to retrospectively analyze a real-world disaster. Live participation in a weekly 1.5 hour online forum is required. The EGR 611 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 612. Engineering Risk. 3 Hours.

Engineering risk is defined both quantitatively and qualitatively as an estimate of the probability that a hazard-related incident will occur and of the severity of harm or damage that could result. This course provides students with tools to assess and reduce safety risks in their own company. These tools include risk assessment matrices, probabilistic risk assessment (PRA) measures, including event tree analysis, fault tree analysis, and other prevention through design concepts. The role of a structured, formalized decision analysis process in preventing serious injuries and fatalities is also explored. Students engage in a risk mitigation decision analysis project, which is specific to their company and/or business sector. Guest lecturers from diverse industries discuss their experiences in assessing and managing risk. Live participation in a weekly 1.5 hour online forum is required. The EGR 612 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C]

EGR 613. Human Performance & Engineering Design. 3 Hours.

Companies can miss important opportunities to eliminate waste if they rely primarily on training to prevent human error. This course explores the historical perspective on human error and serious injury. The course material will provide a solid understanding of the principles of occupational biomechanics and human tolerance to injury with focus on human anthropometry and mechanical work capacity. This course also includes studies of human reliability, static analysis of systems in equilibrium and mechanical systems' design and performance. Due to the quantity of back related injuries and related lost time in the workplace, back pain and injury is studied along with the effect of vibration on the human body. Real-world case studies provide for application of the engineering hierarchy of controls: hazard elimination, hazard substitution, engineering controls, warnings, administrative behavior controls, and personal protective equipment. The course also examines the design aspects of ergonomics, the biomechanical engineering basis of injury prevention, and the long term economic consequences of seemingly minor injuries. In semester projects, students perform incident investigations using biomechanical and other data. After gathering and analyzing data to determine injury causation, they will identify and re-design error-provocative environments in their own workplaces. Live participation in a weekly 1.5 hour online forum is required. The EGR 613 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 614. Engineering Ethics & Acceptable Risk. 3 Hours.

This course explores the economic, social, and political consequences of safety risk and considers provocative real world dilemmas: What is acceptable risk? Are the fundamental canons of engineering ethics contrary to the concept of acceptable risk? What is the worth of human life? Students will conduct critical reviews of corporate safety and ethics policies from market leaders in all major industries as well as their own company. Real-world case studies provide the framework for exercises in resolving conflicts of interest and avoiding the dilemma of "whistle blowing." Live participation in a weekly 1.5 hour online forum is required. The EGR 614 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C](Can be taken Concurrently)

EGR 615. Leading through Climates of Change. 3 Hours.

All progressive companies are moving toward greater sustainability – protecting people, planet, and profits. To guide their companies through these changes and integrate safety into the priorities at the executive level, safety engineers and professionals must have strong leadership skills. This course explores engineering leadership best practices, including the eight steps of transformational leadership – creating a sense of urgency, creating a guiding coalition, developing a vision and strategies, communicating the vision, empowering broad-based action, generating short term wins, consolidating gains and anchoring the culture. Guest lecturers from diverse industries discuss their experiences in managing change in today's global business environment. Live participation in a weekly 1.5 hour online forum is required. The EGR 615 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 616. Policy Issues in Prevention through Design. 3 Hours.

This course provides an overview of best practices in four major policy areas: (1) cost-benefit analysis; (2) corporate culture and the "HR Department"; (3) standards, codes, and regulations; and (4) strategic alliance development. Case studies are used to illuminate both the role of engineers and other safety professionals in shaping public policy on the local, national and international levels and the ethical challenges they encounter. The significance of an organization's corporate culture in developing and implementing advanced safety management plans is also explored. Students conduct "gap analyses" of their company's policies by comparing them to best practices and identifying unintended consequences of poor safety policy in their own business and industry sector. Students will engage in discussion board posts on contemporary policy issues and participate in exercises related to federal rulemaking. Live participation in a weekly 1.5 hour online forum is required. The EGR 616 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 617. Crisis Leadership & Safety-Critical Design. 3 Hours.

Unique technical and leadership skills are required to avert or manage a crisis. This course teaches students those skills in an experiential learning environment. Case studies of real-world industrial and environmental disasters provide the framework for exploring critical human-machine interfaces; crisis communication; coping with people in recovery and developing and implementing a business continuity response. Guest lecturers from diverse backgrounds will discuss their experiences in managing crisis events. Students will engage in discussion board posts and develop a Business Impact Analysis report for their work environment or business unit. Live participation in a weekly 1.5 hour online forum is required. The EGR 617 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 618. Intrapreneurship & Calculated Risk Taking. 3 Hours.

Intrapreneurs are innovative change agents inside an existing corporation -- insider entrepreneurs. This course prepares students to become and/or identify effective intrapreneurs within their own business environment. Topics include the history of intrapreneurial success inside technology-based corporations and the fundamentals of recognizing opportunity and launching a new, promising enterprise within an existing business. Students also learn to recognize and effectively manage intrapreneurial risk, including the safety readiness of technology for the market place and the corporate "immune response" to new ideas and inside innovators. Case studies of real-world intrapreneurial success and failure provide a framework for group discussion and student exercises. Live participation in a weekly 1.5 hour online forum is required. The EGR 618 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 619. Capstone Project - Part I. 3 Hours.

Bringing to bear the competencies acquired through the program, students develop a proposal, outline, schedule and rough draft of a comprehensive, advanced safety engineering and management plan for their business unit/specialty area that is consistent with the ANSI/AIHA Z10-2005, Occupational Health and Safety Management Systems standard. Judicious selection of the Capstone topic and of projects throughout the ASEM curriculum allows students to build on and use earlier course products to support their Capstone report. Live participation in a quarterly 1.25 hour online forum is required. Must be taken during the penultimate or final semester.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C] and EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C]

EGR 620. Capstone Project-Part 2. 3 Hours.

Students complete the development of their comprehensive, advanced safety engineering and management (ASEM) plan that was begun in EGR 619, including background information of the project, an ASEM plan (management and employee participation, planning, implementation and operation, evaluation and corrective action and management review), and rollout strategy. Students must submit completed report with detailed attachments, and orally present project highlights to the class in a live online classroom setting. Live participation in a quarterly 1.25 hour online forum is required. EGR 620 must be taken during the final semester.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C] and EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C]

EGR 640. Teambuilding. 2 Hours.

This course will focus on the effective building and management of teams. Topics include team communication, facilitation skills, building consensus, and handling common problems.

EGR 641. Professional Communication. 3 Hours.

This course will improve the communication skills of technology professionals. The course focuses on conveying technical information effectively in the classroom environment, formal lectures, and to a non-technical audience.

EGR 642. Technical Entrepreneurship. 3 Hours.**EGR 645. Technical Project Management. 3 Hours.**

This course teaches the fundamental principles of project management. Emphasis is given to activities and risk factors associated with technology infrastructure and software development projects.

EGR 646. Management of Technology. 3 Hours.

This course focuses on the application of systems engineering methods to the management of technological change within the organization. Topics include systems thinking, managing complexity, the systems engineering lifecycle, reliability and availability, quality control, and measuring effectiveness.

EGR 650. Project Leadership. 1 Hour.

This course focuses on the development of professional leadership skills through active involvement in the planning and execution of an annual IEM seminar project.

EGR 651. Technology Ventures. 3 Hours.

This course builds upon the topic of entrepreneurship by focusing on the process of developing and managing a successful venture. The objective is for clients to emerge with the knowledge and confidence needed to successfully manage, or start, a technology venture.

EGR 652. Financial Concepts for Entrepreneurs. 3 Hours.

This course introduces basic financial concepts including the interpretation of financial statements, managing cash flow, and the time value of money.

EGR 658. Special Topics in (AREA). 1-3 Hour.

Investigation and/or research of special topic in the areas of information engineering and management.

EGR 690. Special Topics. 1-4 Hour.

EGR 697. Engineering Grad Internship. 1-6 Hour.
Student works in a professional environment reflective of research interests pursuant to graduate degree.

EGR 710. Intro to Interdisciplinary EGR. 3 Hours.

Introduces current trends and cutting-edge research in areas related to engineering that require interdisciplinary approaches.

EGR 711. Methodology for IEGR Research. 3 Hours.

Presents a detailed perspective on methods of approach for interdisciplinary problems, including experimental design, laboratory experimentation, physical modeling, simulation, and analysis.

EGR 790. Special Topics. 1-4 Hour.**EGR 792. Interdisciplinary EGR Seminar. 1 Hour.**

Discussions and presentations of research involving engineering in a number of disciplines. Required for graduate students in the interdisciplinary engineering Ph.D. program.

EGR 796. Journal Club in Interdisciplinary Engineering. 1 Hour.

Journal club to discuss current research and investigations in areas of interdisciplinary engineering.

EGR 797. Environmental Health Engineering Internship. 1-6 Hour.

Student works in a professional environment reflective of research interests pursuant to doctoral degree.

EH-English Courses**EH 501. Tutoring Writing. 3 Hours.**

Designed to improve writing skills through understanding theories of tutoring and to prepare future teachers for tutor training and writing center development.

EH 502. Writing in Popular Periodicals. 3 Hours.

An exploration of current theory regarding the production, distribution, and consumption of popular periodicals and practice contributing to these sources.

EH 503. Business Writing. 3 Hours.

Advanced writing concentration on letters, resumes, and professional reports.

EH 504. Technical Writing. 3 Hours.

Advanced writing concentrating on short informal and long formal reports.

EH 505. Poetry Writing Workshop. 3 Hours.

Advanced work in poetry through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 506. Poetry Writing Workshop. 3 Hours.

Advanced work in poetry through critique of student writing. May be taken twice for credit.

EH 507. Creative Nonfiction Writing Workshop. 3 Hours.

Advanced work in creative nonfiction through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 508. Creative Nonfiction Writing Workshop. 3 Hours.

Advanced work in creative nonfiction through critique of student writing. May be taken twice for credit.

EH 509. Fiction Writing Workshop. 3 Hours.

Advanced work in prose fiction through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 510. Fiction Writing Workshop. 3 Hours.

Advanced work in prose fiction through critique of student writing. May be taken twice for credit.

EH 511. Novel. 3 Hours.

Techniques of prose fiction: Selections from British, American, European, and Russian Literature.

EH 512. Poetry: Lyric and Shorter Forms. 3 Hours.

Songs, sonnets, elegies, odes, and dramatic monologues.

EH 513. Drama. 3 Hours.

Techniques and problems of drama, classical through contemporary.

EH 514. Modern British and European Drama. 3 Hours.

Techniques and problems of modern European drama: Ibsen, Shaw, Chekhov, Synge, Pirandello, Brecht, Beckett, and others.

EH 515. The Form of Fiction: The Short Story. 3 Hours.

American, Russian, and European short stories emphasizing aesthetics of form.

EH 516. Modern American Poetry. 3 Hours.

Selections from Frost, Stein, Stevens, Pound, Eliot, Williams, Doolittle, Jeffers, Moore, McKay, Loy, Toomer, Crane, Hughes, and others.

EH 517. Creative Writing Workshop: Special Projects. 3 Hours.

Advanced work in genres other than poetry, fiction, or creative nonfiction or a special workshop taught by a visiting writer. May be taken twice for credit.

EH 518. Creative Writing Workshop: Special Projects. 3 Hours.

Advanced work in genres other than poetry, fiction, or creative nonfiction or a special workshop taught by a visiting writer. May be taken twice for credit.

EH 519. Young Adult Literature. 3 Hours.

Close reading of young adult literature; its form and history, its assumptions about adolescent psychology, and its literary relationship to the traditional canon.

EH 520. World Literature I: to 1600. 3 Hours.

Selections in translation from Greek, Roman, and Hebrew classics, other literature, and from oral tradition.

EH 521. World Literature II: 1600 to Present. 3 Hours.

Selections in translation from European, African, and South American writers.

EH 522. African Literature. 3 Hours.

Selected novels, short stories, autobiographies, folk tales, drama, essays, films, songs from pre-colonial Africa to the present, including works by Emecheta, wa Thiong'o, Head, Achebe, Ba, Armah, Laye, Salih, Soyinka, and Abrahams.

EH 523. African Women's Literature. 3 Hours.

Works by African women from pre-colonial Africa to present.

EH 531. Special Topics in Film. 3 Hours.

In-depth study of a specialized topic in film. The course may focus on a particular national cinema (American, Italian, Japanese, etc.); one or more directors (Welles, Hitchcock, Kubrick, etc.); a development in film history or genre (the studio system, the French New Wave, the musical, etc.); or issues in visual representation (film theory; adaptation; sexuality in film, etc.).

EH 533. Academic Writing. 3 Hours.

Introduction, for students in all disciplines, to the process of scholarly inquiry and the most common genres of academic writing, including critiques, bibliographies, proposals, conference presentations, and articles.

Prerequisites: EH 101 [Min Grade: C] or EH 102 [Min Grade: C]

EH 535. Teaching Creative Writing. 3 Hours.

Examines current theory and practice in teaching creative writing, particularly in secondary schools and introductory college-level classes.

EH 541. Literary Theory and Criticism I: Ancients to 19 ce. 3 Hours.

Introduction to theories of art and literary production in the contexts of aesthetics and culture from Plato to the end of the nineteenth century.

EH 542. Literary Theory and Criticism II: 20th Cent-Present. 3 Hours.

Introduction to theories of art and literary production in the contexts of aesthetics and culture from Russian formalism to the present.

EH 543. Archetype and Myth. 3 Hours.

Recurring images, underlying patterns, and shapes-of-meaning in poetry, fiction, and fairy tales.

EH 544. Women's Literature and Theory. 3 Hours.

Literary works and theoretical perspectives of Angelou, Chopin, Hong, Kingston, Hurston, Walker, Woolf, Plath, and others.

EH 545. Special Topics in African-American Studies. 3 Hours.

Investigates writings of colonial and contemporary African American writers on specific topic.

EH 546. African-American Autobiography. 3 Hours.

Personal narrative by African Americans, including texts by Wheatley, Douglas, Jacobs, Wilson, Dubois, Johnson, Hurston, Hughes, Wright, Baldwin, Angelou, and Moody. 3 hours.

EH 547. African-American Dramatic Tradition. 3 Hours.

Development of African American Dramatic Tradition from the nineteenth century through the Harlem Renaissance and Black Arts Movement to Contemporary Postmodernism, including Brown, Hurston, Baraka, and Wilson. 3 hours.

EH 548. African-American Poetry Tradition. 3 Hours.

Development of African American Poetry from its early works to the present, including Wheatley, Dunbar, Hughes, Brooks, and Angelou. 3 hours.

EH 550. Advanced Grammar. 3 Hours.

Present-day English grammar.

EH 551. Generative Grammar. 3 Hours.

Advanced analysis of English grammar with emphasis on Chomskyan generative grammar.

Prerequisites: EH 250 [Min Grade: C] or EH 251 [Min Grade: C]

EH 552. Grammar and Usage for English Teachers. 3 Hours.

Intensive review of structure of English; usage, punctuation, and style as these relate to grammar.

EH 553. Advanced History of the English Language. 3 Hours.

Advanced topics.

EH 554. The Biology of Language. 3 Hours.

Vocal tract and neuroanatomical specializations for language, language acquisition, genetic language disorders, language and other primates, and evolution of language.

EH 556. Visual Rhetoric. 3 Hours.

The nature of public communication is changing. Although words will never die, images have become a fast and effective medium for persuasion, and any writer who is interested in public communication must now have skills in both the analysis and production of visual rhetoric. Visual Rhetoric offers intensive studies in the rhetorical characteristics of image communication, especially as it intersects with verbal communication. Students in this course will learn strategies for incorporating persuasive images into verbal texts, thus enhancing the overall impact of any document.

EH 557. Writing and Medicine. 3 Hours.

Intensive examination of public discourse focusing on health, illness, and medical practice and production of texts as health consumers and health practitioners.

EH 559. Discourse Analysis. 3 Hours.

Intensive studies in public discourse, with particular emphasis on the social politics of linguistic choices.

EH 560. American Women Writers before 1900. 3 Hours.

Survey of American Women's Writing before 1900.

EH 561. American Literature 1620-1820. 3 Hours.

Representative American writing from colonial period to Washington Irving.

EH 562. American Literature 1820-1870. 3 Hours.

Representative writers such as Alcott, Cooper, Poe, Hawthorne, Melville, Emerson, Fuller, Fern, Harper, Thoreau, Jacobs, Whitman, Stowe, and Dickinson.

EH 563. American Literature 1870-1914. 3 Hours.

Realism and naturalism: Twain, James, Howell, Crane, Jewett, Wharton, Dreiser, Norris, and Chopin, among others.

EH 564. American Literature 1914-1945. 3 Hours.

Selected fiction, poetry, and drama of major American writers such as Eliot, Faulkner, Hemingway, Hurston, O'Neill, and Wright.

EH 565. American Literature 1945-Present. 3 Hours.

Selected fiction, poetry, and drama in context of post-war cultural trends and literary movements.

EH 566. The Slave Narrative and Its Literary Expressions. 3 Hours.

Genre of slave narrative, its critical theories, and its nineteenth- and twentieth-century literary expressions. Includes Equiano, Jacobs, Wilson, Douglass, DuBois, Wright, Angelou, and Morrison.

EH 567. Black Women Writers. 3 Hours.

Evolution of Afrocentric feminist consciousness through early and contemporary writings.

EH 568. The Harlem Renaissance. 3 Hours.

Black writers during Harlem Renaissance movement. Includes Johnson, Toomer, Murray, Larsen, McKay, Thurman, Reed, and Morrison.

EH 569. Medieval Culture: Literature and Society. 3 Hours.

Exploration through art, literature, and history of dominant themes of Middle Ages, from Germans to Dante and Chaucer.

EH 570. Arthurian Legend. 3 Hours.

King Arthur and his knights in literature from sixth-century history and formulation of legend in Middle Ages to its use in twentieth century.

EH 571. Beowulf in Context. 3 Hours.

An interdisciplinary course in Anglo-Saxon art and culture bearing upon Beowulf, close study of the Norse analogues of the Old English epic. 3 hours.

EH 573. Chaucer: Pilgrimage to Canterbury. 3 Hours.

Selections from Canterbury Tales and Chaucer's fourteenth-century milieu.

EH 574. English Renaissance Drama(Excluding Shakespeare). 3 Hours.

Plays by Marlowe, Kyd, Jonson, Tourneur, Webster, Middleton, and Ford.

EH 575. English Renaissance Poetry and Prose. 3 Hours.

Topics vary. Broad survey of period or close analysis of genre, theme, or author.

EH 576. Shakespeare. 3 Hours.

King Lear, Othello, and three other plays. Required for English majors.

EH 578. Milton. 3 Hours.

Selected prose and poetry, including Paradise Lost. 3 hours.

EH 580. The Restoration. 3 Hours.

Dryden, Butler, Rochester, Marvell, Bunyan, Congreve, Wycherley, and Ethere.

EH 581. The Eighteenth Century: Literature and Culture. 3 Hours.

Interdisciplinary exploration of texts that focuses on social, economic, and political backgrounds. Topics and authors vary.

EH 582. The Eighteenth Century: Theory and Interpretation. 3 Hours.

Formal and philosophical implications of selected texts. Authors and topics vary.

EH 583. British Romanticism. 3 Hours.

Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, Hazlitt, Lamb, and DeQuincy.

EH 585. British Victorian Poetry. 3 Hours.

Tennyson, Browning, Arnold, and others.

EH 586. Eighteenth Century British Novel. 3 Hours.

Fielding, Defoe, Sterne, Smollet, and Richardson.

EH 587. Nineteenth Century British Novel. 3 Hours.

Austen, Dickens, Thackeray, Bronte, Trollope, and Eliot.

EH 588. British Novel: The Modern Age. 3 Hours.

Conrad, Lawrence, Joyce, Woolf, Ford, and others. 3 hours.

EH 589. James Joyce. 3 Hours.

Study of James Joyce's fiction through Ulysses.

EH 591. Major Writers. 3 Hours.

See class schedule for topic. May be repeated.

EH 592. Special Topics. 3 Hours.

See class schedule for topic. May be repeated for total of 9 hours.

EH 593. Special Topics in Linguistics. 3 Hours.

See course schedule for topic.

Prerequisites: EH 250 [Min Grade: C] or EH 251 [Min Grade: C]

EH 597. Individual Studies(Non-Thesis Option). 1-3 Hour.

Non-Thesis Research. See Graduate Director for procedure to apply for this course.

EH 599. Film Thesis. 3 Hours.

Thesis on an independently designed topic within film history or film aesthetics, allowing the completion of the interdisciplinary film minor.

Prerequisites: EH 210 [Min Grade: C]

EH 600. Seminar: Engineering Communication. 3 Hours.

Strengthens engineering students understanding of and application of effective communication practices in the workplace. Subjects covered included techniques of audience analysis; production of problem/solution formats; analysis and creation of reports, journal articles, and proposals; and presentation of ideas in written and oral formats.

EH 601. Seminar: Classical Rhetorical Theory. 3 Hours.

Review of Rhetoric from Classical period through Renaissance with emphasis on the works of Plato and Aristotle.

EH 602. Seminar: Modern Rhetorical Theory. 3 Hours.

Advanced studies in twentieth-century theories of rhetoric; themes include Marxism, feminism, philosophy, semantics, and ideology.

EH 603. Seminar: Literacy in Communities. 3 Hours.

Examines the theory and practice of literacy instruction in varied cultural contexts.

EH 604. Research Methods in Composition and Rhetoric. 3 Hours.

Examination of traditional and current methods of research in composition and rhetoric with practice designing and implementing research tied to students interests.

EH 610. Seminar: Prosody Poetics and Close Reading. 3 Hours.

Fosters an ability to read poetry closely and analytically; examines traditional descriptions of poetic form and meter; introduces recent work in poetic theory and philosophy of poetic composition.

EH 611. Teach Intern in Creative writi. 3 Hours.

Off-campus teaching positions in creative writing in conjunction with elementary, middle, secondary, and community schools or groups. Students should contact the Director of Creative Writing for listings of available positions and application procedures. The Director of Creative Writing in conjunction with the English Department's Graduate Program Committee will determine who will be approved for a teaching internship. Requires admission to the Graduate Program in English, EH 535, and 6 hours of creative writing workshops at the 500 or 600 level.

EH 615. Graduate Poetry Writing Workshop. 3 Hours.

Extensive work in poetry resulting in a manuscript of publishable quality.

EH 616. Graduate Poetry Writing Workshop. 3 Hours.

Extensive work in poetry resulting in a manuscript of publishable quality.

EH 617. Graduate Creative Nonfiction Writing Workshop. 3 Hours.

Extensive work in creative nonfiction resulting in a manuscript of publishable quality.

EH 618. Graduate Creative Nonfiction Writing Workshop. 3 Hours.

Extensive work in creative nonfiction resulting in a manuscript of publishable quality.

EH 619. Graduate Fiction Writing Workshop. 3 Hours.

Extensive work in fiction resulting in a manuscript of publishable quality.

EH 620. Graduate Fiction Writing Workshop. 3 Hours.

Extensive work in fiction resulting in a manuscript of publishable quality.

EH 635. Seminar: Middle English Literature. 3 Hours.

Study of writers other than Chaucer, with a concentration on the writings of the Gawain Poet, the lais and lyrics, and some female writers.

EH 636. Chaucer Seminar. 3 Hours.

Emphasis on the importance of Chaucer as a poet, his contributions to literature, and his cultural setting. *Canterbury Tales* and selected earlier poetry. 3 hours.

EH 637. Seminar: English Renaissance Literature. 3 Hours.

Topics vary. Analysis of a group of texts within a genre, with a common theme, or by a single author or group of authors, as well as the discursive and social contexts in which these texts were produced.

EH 638. Seminar: Eighteenth Century British Literature. 3 Hours.

Analysis of the formal and cultural aspects of 18th-century literature; attention to interdisciplinary aspects of selected texts.

EH 639. Seminar: Nineteenth Century British Literature. 3 Hours.

Intensive exploration of a particular aspect of literature and culture from the Romantic or Victorian period. Focus varies.

EH 640. Seminar: Twentieth Century British Literature. 3 Hours.

An in-depth examination of selected literary trends in modern English and Irish literature, focusing especially on the critical and/or theoretical frameworks by which these trends were defined. Topics vary.

EH 644. Practicum in Teaching Lit.. 3 Hours.

This course focuses on the methods and pedagogical philosophy of teaching English and American literature at the early post-secondary level. Required admission to the MA program in English or registration as a non-degree graduate student.

EH 645. Seminar: Bibliography and Methods of Research. 3 Hours.

Emphasis on how materials in Sterne Library may be used effectively. Includes computer searching, listserv, and the internet. Field trips to special collections.

EH 646. Seminar: Practicum in Teaching Writing. 3 Hours.

Theory and practice of teaching writing at the postsecondary level.

EH 647. Practicum in Tutoring Seminar. 1 Hour.

English grammar review and effective tutoring strategies. Prerequisites: students must have been awarded an assistantship and be scheduled to tutor in the Writing Center. 1 hour.

EH 648. Seminar: Introduction to Old English. 3 Hours.

Part one of an in-depth study of Anglo-Saxon English culminating in interpretation of *The Dream of the Rood* and *The Wanderer* in the original alliterative verse. Satisfies the M.A. linguistics requirement.

EH 649. Beowulf Seminar. 3 Hours.

Part two in the Old English sequence, exploring a few shorter works as well as the epic in close detail.

Prerequisites: EH 648 [Min Grade: C]

EH 655. Seminar: History of the English Language. 3 Hours.

EH 656. Seminar: American Literature 1620-1820. 3 Hours.
Focus on texts reflecting the evolution of American culture from its colonial period to the early national period.

EH 657. Seminar: American Literature 1820-1870. 3 Hours.

Centering on writers from the American Romantic Movement to explore such themes as their use of symbolism, transcendentalism, feminist approaches, or connections with American landscape art.

EH 658. Seminar: American Literature 1870-1914. 3 Hours.**EH 659. Seminar: American Literature 1914-1945. 3 Hours.**

A study of one or more authors from the following list: O'Neill, Faulkner, Larsen, Frost, Eliot, Stevens.

EH 660. Seminar: American Literature 1945-Present. 3 Hours.

Selected postmodern works in the context of U.S. cultural trends and literary movements since the Cold War.

EH 677. Seminar: Shakespeare: The Body Gender and Sexuality. 3 Hours.

Investigates languages of the body, sexuality, and gender in seven plays, as well as historical materials and current criticism and theories of the body.

EH 690. Major Writers Seminar. 3 Hours.

See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

EH 692. Special Topic/Eliot & Allusion. 3 Hours.

Special Topics/ Eliot and Allusion. This class will read the seminal poems of Eliot's career alongside the texts from which he draws his allusions. We will examine the extent to which the allusions work metonymically in Eliot's poetry. We will also examine where the allusive metaphors break down, fail, and contradict each other, and we will examine the effects of these "failures." Students will compose several reader response assignments, a term paper and a final exam. Pre-req: Admission to Graduate School in English or permission of instructor.

EH 693. Special Topics Seminar. 3,6 Hours.

See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

EH 694. Seminar: British Literary Themes from the Middle Ages Through Early 18th Century. 3 Hours.

See class schedule for topic.

EH 695. Seminar: British Literary Themes from Jane Austen to the Present. 3 Hours.

Recent themes include effects of industrialism, role of women, the concept of the gentleman, loss of faith, and relation of the artist and audience. Writers vary.

EH 696. Sem: American Literary Themes from the Puritans to the Present. 3 Hours.

See class schedule for topic.

EH 698. Directed Studies Seminar. 1-6 Hour.

See departmental description of the M.A. program for special restrictions on this course. Prerequisite: Permission of Associate Chair. 1-3 hours.

EH 699. Thesis Research. 1-6 Hour.

Prerequisites: GAC M

EHS-High School Education Courses

EHS 556. Classroom Mgt in Sec Schools. 1-3 Hour.

Designed to help teachers build their own personal system of discipline, consonant with their philosophies and personalities as well as with realities of students and schools. Emphasis on successful classroom management techniques.

EHS 558. Science Technology and Society. 3 Hours.

Explores nature of momentous changes: origin, current status, and future direction. Emphasis on role of educational community in helping young people to better understand and deal with various issues raised.

EHS 565. Sec School Curriculum: Math. 3-4 Hours.

Preparation to teach secondary school mathematics: making informed decisions about curricula, learners, and methodology in mathematics. Acquainting students with current state and national reforms in mathematics education. Problem solving, computers and calculators, and manipulatives in teaching mathematics. Developmental levels and individual differences of learners. Includes 50 hours of field experiences. Admission to Alternative Master's Program required.

Prerequisites: EHS 600 [Min Grade: C]

EHS 566. Language Arts Methods. 3-4 Hours.

A study of and practicum in the teaching of Language Arts and English in the secondary school; includes field experiences. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EHS 600 [Min Grade: C]

EHS 567. Secondary Science Methods. 3-4 Hours.

Teaching methods and curricula in secondary science programs. Includes field experiences. Admission to Alternative Master's Program required.

Prerequisites: EHS 600 [Min Grade: C]

EHS 568. Secondary Social Sci Methods. 3-4 Hours.

Understanding curriculum design and implementation as it relates to Social Studies in grades 7-12. Required demonstration of abilities to make informed decisions concerning what strategies to use with what students and how best to evaluate the students' progress in achieving the defined goals of a lesson. Includes field experiences. Admission to Alternative Master's Program required.

Prerequisites: EHS 600 [Min Grade: C]

EHS 569. Secondary School Curriculum: Foreign Language. 3 Hours.

Approaches and methods of teaching and evaluating foreign language at all levels. Includes field experiences. Admission to Alternative Master's Program required.

Prerequisites: EHS 600 [Min Grade: C]

EHS 570. Practicum II. 1 Hour.

Field experience in school-based setting.

EHS 571. Special Education Accommodation/Modification Lab. 1 Hour.

Problems and issues in special education and the regular classroom.

EHS 597. Special Problems in Education. 1-3 Hour.

Seminar for seniors and graduate students; individualized readings and research projects based on student's special interests. May be repeated for total of 6 hours.

EHS 599. Field Studies in (Selected Educational Settings). 1-3 Hour.

Field visits to locations of high educational impact, preceded by organized group meetings to develop background and concepts on which visits will be based; summation meetings follow visits. Individual projects and papers prescribed as appropriate. Credit determined by complexity of area or topic under study and necessary length of time rather than by distance involved. Cost for travel and other related arrangements to be announced for each study group.

EHS 600. Secondary Education Curriculum and Methods I. 3 Hours.

Introductory course in Alternative Masters Program for secondary school education. Developing basic teaching skills and understanding of interdependence among all levels within school and community. Course requires 40 hours of field experiences beyond class meetings.

EHS 611. Advanced Special Methods for Teaching Foreign Lang. 3 Hours.

Instructional objectives, classroom learning activities, utilization of differential pedagogical activities, improved use of source materials, and material sources. This course requires 50 hours of field experiences.

Prerequisites: EHS 600 [Min Grade: C]

EHS 612. Teaching English Grades 7-14. 3 Hours.

Curriculum and instruction in English programs. Issues, materials, and methods. Field experiences required.

Prerequisites: EHS 566 [Min Grade: C]

EHS 614. Teaching Social and Behavioral Science Grades 7-14. 3 Hours.

Advanced course in methods and materials of teaching social and behavioral sciences in high school. General philosophy and purpose of social science disciplines. Field experiences required.

Prerequisites: EHS 568 [Min Grade: C]

EHS 615. Methods of Teaching Science Grades 7-14. 3 Hours.

Science teaching methods, classroom interaction, current research, process skills, science/society issues, and cognitive development of students. Field experiences required.

Prerequisites: EHS 567 [Min Grade: C]

EHS 616. Teaching Mathematics in Secondary School. 3 Hours.

Philosophical and psychological principles applied to teaching math. Field experiences required.

Prerequisites: EHS 565 [Min Grade: C]

EHS 644. Workshop in Teaching. 3 Hours.

Prerequisite: Permission of instructor.

EHS 645. Inquiry in the Social Studies. 3 Hours.

Inquiry and discovery techniques through use of simulation, games, role playing, and other group activities. Social studies projects, programs, and materials.

EHS 647. Secondary School Programs. 3 Hours.

Innovations, programs, and classroom practices; forces leading to recent trends.

EHS 650. Teaching the Emerging Adolescent. 3 Hours.

Curriculum, materials, and methods of instruction reflecting needs and characteristics of age group.

EHS 651. Innovative Practices in Teaching in Secondary School. 3 Hours.

Innovative practices in planning, instructing, and evaluating high school area studies. May be repeated if taken in different areas of study.

EHS 653. Current Issues in Secondary Education. 3 Hours.

Critical problems affecting teacher and curriculum in grades 6-14.

EHS 680. National Board Seminar for Secondary Education. 3 Hours.

Course involves 18 Saturday seminars during the school year to prepare teachers for National Board Candidacy and to support candidates as they go through the certification process. Students enrolled in this course may be either pre-candidates or candidates for National Board Certification.

EHS 681. Special Topics in Education. 1-6 Hour.

Prerequisite: Permission of instructor.

EHS 690. Intern Seminar in Sec Edu. 1 Hour.

Observation and teaching in secondary school (15 weeks minimum). Includes attendance at a weekly seminar on campus. Unconditional acceptance in Alternative Master's Program and approval of application for internship required.

EHS 691. Secondary School Internship. 3-9 Hours.

Observation and teaching in secondary school (15 weeks minimum). Includes attendance at a weekly seminar on campus. Prerequisites: Unconditional acceptance in 5th-Year Program and approval of application for internship.

EHS 692. Field Studies (Selected Educational Settings). 1-3 Hour.

Field Studies.

EHS 693. Advanced Field Experience. 3 Hours.

Field Studies.

EHS 695. Secondary School Internship Speech Comm/Theatre. 6 Hours.

Observation and teaching in secondary school (10 weeks or 300 clock hours minimum). Students also attend minimum of five 3-hour seminars designed to meet specific needs. Prerequisites: Unconditional acceptance in 5th-Year Program, completion of graduate methods course 9 hours in certification area, at least 9 hours in professional in addition to methods course, and approval of application for internship.

EHS 697. Individual Readings in Education. 1-3 Hour.

May be repeated for total of 6 hours. Prerequisite: Permission of advisor and instructor.

EHS 698. Individual Research in Education. 1-6 Hour.

Research Prerequisite: Permission of instructor.

EHS 699. Thesis Research. 6-9 Hours.

Thesis Research. Prerequisites: Admission to candidacy and permission of instructor.

Prerequisites: GAC M

EHS 710. Creative Teaching in Secondary School. 1-3 Hour.

Advanced methods and materials for teaching grades.

EHS 720. Individual Research in Education. 3-6 Hours.

Research Prerequisites: Master's degree and permission of instructor.

ELC-English Language Culture Courses**ELE-Elementary Education Courses****ELE 620. Teaching Mathematics in Elementary School. 3 Hours.**

Issues and approaches in elementary mathematics; research and implementation for instruction.

Prerequisites: EEC 660 [Min Grade: C]

ELE 621. Teaching Language Arts in Elementary School. 3 Hours.

Issues and approaches in teaching elementary school language arts. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

ELE 622. Teaching Social Studies in Elementary School. 3 Hours.

Function and organization of social studies programs in elementary schools. Selection and adaptation of content, resources, teaching materials, and strategies and methods. Emphasis on current trends.

Prerequisites: EEC 660 [Min Grade: C]

ELE 623. Teaching Science in Elementary School. 3 Hours.

Issues and approaches in elementary science. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

ELE 624. The Elementary School. 3 Hours.

Organizational patterns in American elementary schools.

ELE 690. Practicum in Elementary Education. 3-6 Hours.

Practicum Prerequisite: Permission of instructor.

ELE 691. Internship in Elementary Education. 3-9 Hours.

Full-time internship as elementary education teacher for 10 weeks (300 clock hours). Responsibility as teacher for at least 10 days. 3 or 9 hours.

ELE 692. Practicum Supervision in ELE. 2 Hours.

Supervision of practicum students.

ELE 721. Developing Effective Instruction in Elementary Sch. 3 Hours.

Leadership role of senior teachers; analysis and enhancement of instructional programs; development of teaching staff. Prerequisite: Master's degree.

EMC-Emergency Medical Care Courses**EMS-Middle School Education Courses****EMS 590. Middle School Internship. 3 Hours.**

Observation and teaching in middle school (10 weeks or 300 hours minimum). Students will attend a minimum of five 3-hour seminars designed to meet specific needs. Prerequisites: Unconditional acceptance in the 5th-Year Program and completion of graduate methods course, 9 hours in academic work, and at least 9 hours in professional courses in addition to the methods course.

EMS 648. The Middle School. 3 Hours.

Curriculum and principles in middle school education. Development of middle school from early junior high school movement. Examination of middle school programs and activities.

EMS 649. Studies in Middle School Education I II III. 1-3 Hour.

Advanced workshops in various phases of middle school program. Phase I foundations (history, growth and development, philosophy); Phase II, curriculum; and Phase III, instruction.

EMS 698. Individual Research in Education. 1-6 Hour.

Research in Education. Prerequisite: Permission of instructor.

EMU-Music Education Courses**EMU 502. Methods of Teaching Music N-6. 3 Hours.**

Teaching music in the elementary school environment. Investigation of critical elements in the teaching and learning process as related to music in grades N-6. Prerequisites: Permission of instructor.

EMU 503. Methods Teaching Music N-6 Lab. 1 Hour.

Provides public school observation experiences for music education students enrolled in EMU 502. Prerequisites: Permission of instructor.

EMU 690. Internship in Music Education. 3-9 Hours.

Internship in Music Education. Weekly seminar attendance required.

Prerequisites: EMU 502 [Min Grade: C] and EMU 503 [Min Grade: C] and MU 529 [Min Grade: C] or MU 530 [Min Grade: C]

ENH-Environmental Health Sci Courses**ENH 600. Fundamentals of Environmental Health Science. 3 Hours.**

This introductory course is designed to teach public health graduate students the fundamental concepts of Environmental Health Science, the scientific research methods used to study the interaction between human health and the environment, and basic issues in the environmental management of occupational and environmental health problems. Preq: Admission into the MPH program or permission of instructor. College level biology and/or chemistry strongly recommended.

ENH 601. Environmental Chemistry. 3 Hours.

Chemical concepts applied to pollutant behavior in biosphere; absorption, leaching, evaporation. Mechanisms of chemical modification in environmental, photochemical processes, redox systems, hydrolysis; metabolic transformation of selected pesticides, air contaminants, and hazardous chemical wastes are also discussed. Preq: General chemistry and calculus recommended.

ENH 602. Environmental Management. 3 Hours.

Comprehensive introduction to environmental management, with emphasis on environmental health issues. Cases from both U.S. and international settings. Key topics include air and water contamination, hazardous materials, ozone depletion, climate change, risk perception, risk management, environmental communication, environmental regulation, and recent strategies for environmental management.

ENH 603. Management of Occupational Health and Safety Program. 3 Hours.

Provides an overview of management principles as they relate to occupational safety and industrial hygiene, emphasizing the development of the "soft" skills. It provides management training as well as communication techniques for illustrating and justifying changes that are technically sound. The course will review theoretical and practical principles of managing safety and industrial hygiene programs. Real world examples are used to support management theories.

ENH 605. Remote Sensing and Public Hlth. 3 Hours.

This course will give students the chance to learn about a wide range of remote sensing applications in both classrooms and lab settings. The course will progress from basic remote sensing analysis techniques to the point where the students are responsible for their own research projects.

ENH 608. Real World Remote Sensing. 3 Hours.

This course will give students the chance to learn about a wide range of advanced remote sensing applications in both classroom and lab settings. This course will start out with an overview of article publication preparation and the importance of combining GIS and remote sensing data. This course will progress to students learning GIS applications and analytical techniques and how to input their remote sensing data into their own GIS for additional analysis.

ENH 609. Field Studies in Jamaica. 3 Hours.

This intensive summer course is held in Jamaica and is an overview of infectious disease surveillance and control with an emphasis on practical public health field experience.

ENH 610. Environmental Disasters. 3 Hours.

Examines the worldwide problem of toxic disasters, particularly those involving invisible agents (chemicals, infectious disease agents, radiation). Theory, case studies, field experience, and current scientific research are reviewed, and the public health, environmental, human services and public policy implications of toxic disasters are discussed.

ENH 610Q. Environmental Disasters (Online). 3 Hours.

This multidisciplinary course examines the worldwide threat of environmental disasters. Theory, case studies, and current research are reviewed, and the public health, environmental, human service, psychosocial and public policy implications of toxic disasters are discussed.

ENH 611. Environmental & Occupational Exposure Assessment. 3 Hours.

This course is intended to develop an understanding and appreciation of environmental exposure assessment and its role in providing the tools and information for toxicology, epidemiology, and risk management. The course material introduces the general concepts of first recognizing environmental exposures to chemicals in human populations, and then using sampling techniques to assess exposures. This includes ecologic and personal monitoring studies, the techniques and equipment used for sampling and analysis, and interpretation of data.

ENH 611Q. ENH and Occup Exp Assmt. 3 Hours.

This course is intended to develop an understanding and appreciation of environmental exposure assessment and its role in providing the tools and information for toxicology, epidemiology, and risk management. The course material introduces the general concepts of first recognizing environmental exposures to chemicals in human populations, and then using sampling techniques to assess exposures.

ENH 612. Assessing & Managing Environmental Risks. 3 Hours.**ENH 612Q. Asse and Mang Env Risks. 3 Hours.**

The purpose of this course is to provide students with an overview of environmental policy, with a focus on demonstrating how toxicology and exposure measurements are used in environmental risk assessment and management. Students are presented with the basic elements of a quantitative risk assessment including hazard identification, exposure assessment, dose-response assessment, and risk characterization.

ENH 621. Fund of Industrial Hygiene. 3 Hours.

Chemical, physical and other hazards and stresses found in the work environment. Recognizing potential hazards by understanding industrial processes, toxicity of environmental contaminants, and occupational disease processes. Study design and preparation for field evaluation, conduct of industrial hygiene surveys, and interpretation of survey results.

ENH 622. Industrial Hygiene Applications for Hazardous Substances. 3 Hours.

This course covers industrial hygiene aspects of hazardous waste operations, and the regulatory aspects of those operations. Students will gain knowledge of the OSHA and EPA regulations related to health and safety issues and will learn about personal safety equipment and techniques, administrative controls, and hazardous waste sampling.

Prerequisites: ENH 621 [Min Grade: C]

ENH 624. Control of Occupational Hazards. 2 Hours.

Importance of engineering controls in reducing occupational health hazards. Substitution of less toxic substances, modification of work processes, and design of local exhaust ventilation systems; proper selections and use of personal protective equipment, especially respirators, also considered.

ENH 625. Indust Hygiene Case Studies. 2 Hours.

Integrates students' basic knowledge through consideration of real work-place situations. Step-by-Step analysis of case reports covering occupational health problems in representative industrial situations. Sequential presentation of overview of working conditions, survey strategies, interpretation of results, and recommendations.

ENH 626. Physical Agents. 2 Hours.

Sources, effects, and control of occupational and environmental noise, ionizing and non-ionizing radiation, and temperature extremes. Review of exposure standards and introduction of measurement equipment and techniques.

ENH 630. Environmental Hygiene in Developing Countries. 3 Hours.

Environmental hygiene and health problems involving poverty and poor sanitation. History of the sanitation movement in western and northern hemispheres; programs aimed at control of diseases.

ENH 636. Evolutionary Medicine. 3 Hours.

This course explores the relatively recent and rapidly expanding field of evolutionary or Darwinian medicine, which takes an evolutionary approach to issues related to human health and disease, i.e., a synthesis of evolution and health sciences. The course is designed as a broad overview of a number of topics, including infectious diseases and the arms race between pathogen and host, genetic diseases, aging, nutrition, cancer, reproductions and development, and behavioral and mental disorders. Preq: Permission of instructor is required.

ENH 648. Global Perspectives/Disease Prevention and Control. 6 Hours.

Known as the Summer Institute, this intensive summer course seeks to train academicians, students and public health practitioners in the principles of modern public health practice. The goals are for students to obtain disciplinary expertise in the prevention and control of tuberculosis, HIV/AIDS/STD's and common chronic diseases in an international setting, enhance their knowledge base in public policy development and to build skills in applied epidemiology and biostatistics. NOTE: Students must be accepted via a special Sparkman Center coordinated application process and payment of fee.

ENH 649. Global Perspectives/Disease Prevention and Control. 6 Hours.

Known as the Summer Institute, This intensive summer course seeks to train academicians, students and public health practitioners in the principles of modern public health practice. The goals are for students to obtain disciplinary expertise in the prevention and control of tuberculosis, HIV/AIDS/STD's and common chronic diseases in an international setting, enhance their knowledge base in public policy development and to build skills in applied epidemiology and biostatistics. NOTE: Students must be accepted via a special Sparkman Center coordinated application process and payment of fees.

ENH 650. Essentials of Environmental and Occupational Toxicology and Diseases. 3 Hours.

Serves as introductory graduate level course that focuses on multiple aspects of toxicology and disease processes associated with environmental and occupational exposures. Students learn basic terminology and concepts of environmental and occupational toxicology as well as occupational and environmental disease recognition, management and prevention. Emphasis is on scientific foundations rather than on addressing topical issues. The general course orientation is towards basic principles, organ system physiology, diseases and prevention.

ENH 650Q. Env and Occup Tox and Diseases. 3 Hours.

This is an introduction to the students who have passed biology competency test if their previous educational background was not related to health or biology. In general, physiological and occupational toxicology and concepts will be developed as needed. Students are reminded that lectures serve as a guide to topics presented in class. These topics should be explored in outside readings. Most reading assignments will be made in the reference texts. Additional readings may be required. There will be two times of class presentation. Students will be divided into groups and present an assigned paper to the class using powerpoint slides. A brief discussion will follow after presentation.

ENH 651. Risk Assessment of Environmental Hazards. 3 Hours.

Biochemical mechanisms, use of computers to attain toxicity information and preparation of health hazard assessments.

ENH 660. Fundamentals of Air and Water Pollution. 3 Hours.

The course is an integrated introduction to air and water pollution, including its sources, transport and effects. The course focuses on the measurement and characterization of air pollutants and the assessment of water quality. Emphasis will also be given to the regulatory control of pollutants and to the technical aspects of engineering controls. The potential impact of air pollutants on the climate change will also be emphasized.

ENH 660Q. Fundamentals of Air and Water Pollution. 3 Hours.

This course is designed to provide Environmental Health Sciences students an introduction to the sources, effects, monitoring and assessment, as well as the regulation and control of air and water pollution. Students will learn the fundamentals of water and wastewater treatment and the associated health effects from improperly treated water. Preq: Admission into either MPH or MSPH program, School of Public Health (or special permission from the course director).

ENH 661L. Environmental Sampling and Analysis Laboratory. 2 Hours.

This course is designed to provide the students with a thorough understanding of the principles and practice of air and water sampling. The course will focus on contaminant gases, vapors, suspended particulate material and dissolved chemicals in water. A basic understanding of chemistry and physics is prerequisite.

ENH 661Q. Environmental Sampling & Analysis Lab. 2 Hours.

This course is designed to provide the students with a thorough understanding of the principles and practice of air and water sampling. The course will focus on contaminant gases, vapors, suspended particulate material and dissolved chemicals in water. A basic understanding of chemistry and physics is prerequisite.

ENH 662. Air Sampling and Analysis Lab. 1 Hour.

Air sampling analysis lab.

ENH 670. Fund of Occupational Safety. 3 Hours.

Basic principles of safety and loss control; emphasis on prevention of losses of people, property, and products in work place. Developing competence in human-factors engineering, fire prevention, physical and behavioral science, product safety, and science of accident prevention.

ENH 680. Field Interdisciplinary Studies. 1 Hour.

Field trips to industries throughout Alabama to observe processes and interact with other occupational health personnel. Seminars held with occupational health nursing, industrial hygiene, and safety and ergonomics; students to exchange information on latest developments in each field.

ENH 680Q. Interdisciplinary Field Studies. 1 Hour.

This course will provide students in occupational safety and health / industrial hygiene, occupational health nursing, occupational safety and ergonomics opportunities to develop critical thinking and analytical skills, provide them with experience in applying discipline-specific knowledge in a broad occupational health and safety context, and provide experience in working in interdisciplinary teams. The course consists of an overview of background and walkthrough survey methodology with emphasis on job safety analysis, an overview of how to perform effectively in an interdisciplinary team, a review of information on an occupational site or process to be evaluated, a walkthrough survey of that site, and a report of the identified hazards and recommended controls. It is anticipated that classroom sessions will be offered by web-based platforms on the UAB and Auburn campuses. There will be a site visit to a workplace selected by the Deep South Center for OH&S faculty.

ENH 681. Interdisciplinary Worksite Evaluations. 2 Hours.

To assist students in developing critical thinking and analytical skills, provide them with experience in applying discipline-specific knowledge in a broad occupational health and safety context, and provide experience in working in interdisciplinary teams. The course consists of an overview of survey methodology and information sources, with emphasis on job safety analysis, a review of the occupational site or process to be evaluated and a report of the identified hazards and recommended controls.

ENH 681Q. Interdisciplinary Worksite Evaluation. 2 Hours.

This course will provide industrial hygiene, occupational health nursing, occupational safety and ergonomics students, with an interdisciplinary experience in conducting evaluations of workplace settings to identify health and safety hazards and recommend appropriate control measures. It will also provide industrial hygiene and occupational safety and health students with an opportunity to interact with occupational and environmental medicine physicians and occupational health nurse practitioners in an occupational health clinic setting. Students enrolled in this course must be admitted to one of the academic programs of the Deep South ERC, and have completed ENH 680 - Interdisciplinary Field Studies.

Prerequisites: ENH 680 [Min Grade: C]

ENH 691. Currnt Tpc in ENH Occp Hlth Sft. 1 Hour.

Development of communication skills through objectively reviewing scientific literature; presentations and summaries of research or professional activities.

ENH 691Q. Current Topics in Environmental Health and Occupational Health and Safety. 1 Hour.

This course is designed to acquaint students with aspects of the dynamic field of environmental and occupational health and safety research and practice. This will be accomplished by discussion of the scientific literature, presentation of faculty research interests, presentation of student research projects, their internship experience and presentation.

ENH 695. Masters Level Seminar. 1 Hour.

Weekly seminar series of Environmental Health Sciences faculty, postdoctoral fellows, and invited guest lecturers. All PhD candidates in Environmental Health Sciences are required to attend all of the seminars.

ENH 697. Internship. 3-9 Hours.

Field experience under joint direction of a public health faculty member and qualified specialist working in selected aspects of public health.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

ENH 698. Masters Directed Research. 1-9 Hour.

Independent study with guidance of appropriate faculty.

ENH 699. Masters Level Project Research. 1-9 Hour.

Research for project under direction of research project committee.

ENH 700. Scientific Basis of Environmental Health. 3 Hours.

This is an overview course that is intended to provide doctoral students with a broad understanding of the scientific principles on which environmental health is based within the context of the interaction of human activities and ecosystems, and the reciprocal impact of those interactions on human health and global ecology.

ENH 701. Environmental Chemistry. 3 Hours.

This advanced course covers physical and chemical processes that determine the dynamic nature of the atmosphere and interrelations with water and soil. It also covers measurement methods and data analysis regarding observed concentrations of many key compounds. The course also covers chemical aspects of current environmental change issues, as well as reviews risk assessment as applied to tropospheric air quality. NOTE: Prerequisite of ENH 601 is preferred. Other course emphasizing thermodynamics, kinetics and transport phenomena can be used with permission of instructor.

ENH 702. Advanced Topics in Environmental Management. 3 Hours.

This course extends the grounding of students in environmental management concepts, issues, and strategies with new course material on ecosystem management, ecological risk assessments (using case studies for assessments under TSCA, FIFRA, Non-indigenous species and CERCLA) and frameworks for integrating science and preventive public policy, such as the precautionary assessment framework. NOTE: If course prerequisite of ENH 602 is not met, permission of instructor is required.

Prerequisites: ENH 602 [Min Grade: C]

ENH 705. Special Topics (Readings) in Environmental and Occupational Health. 1-9 Hour.

Following topics taught on request on individual basis. 1 - 9 hours each Radiological Health; Air Pollution; Systems Safety; Advanced Toxicology; Environmental Monitoring; Noise Control; Techniques of Biochemical and Molecular Toxicology.

ENH 706. Mitochondria Hlth, Disease,Tox. 3 Hours.

Requirement This course is designed for doctoral students admitted to campus-wide PhD programs in the biomedical, basic, and public health sciences, post-doctoral fellows, medical students, residents, staff and members of the faculty interested in mitochondrial biology. Students outside the School of Public Health and Joint Health Science Doctool Training PROgrams must contact the course Director before enrolling in the course to see if slots are still available. Prerequisite: Successful completion of doctoral level biochemistry/molecular biology course Description:The course will consist of didactic lectures by faculty members on a specific topic in the field of mitochondria biology and toxicology. These lectures will be complemented by student presentations of original research article, which are related to the presented subject matter and that place the discussed topic into the context of human health, disease, and toxicology. This format will allow for students to gain a solid understanding of normal mitochondria physiology, which they can then use to explore the literature to reveal the importance of mitochondria dysfunction in human diseases and toxicology responses. This course will be guided by the course Director and other faculty members who will assist in the selection of relevant readings and facilitate in-class discussions among the students.

ENH 710. Grant Proposal Writing in Biomedical Sciences. 1 Hour.

This course will train second-year graduate students in the intricacies of writing research proposals in the biomedical sciences.

ENH 720. Integrated Biomedical Science for Environmental Health I. 10 Hours.

The purpose of this course is to provide students with a rigorous background in the principles of biological chemistry and cellular physiology. Students should master and include the application of these principles to research protocols and performance. The knowledge acquired can then be applied to organ-system physiology, pathophysiology, pharmacology, and genomics in ENH 721 and ENH 722. (Course is scheduled with IBS 700).

ENH 721. Integrated Biomedical Science for Environmental Health II. 8 Hours.

The purpose of this course is to integrate the anatomic, physiologic, pathophysiologic and pharmacologic principles of molecular, cellular, whole tissue and organ physiology. The material mastered in this course builds upon the basic principles learned in ENH 720 and will facilitate understanding in genetic-based disorders and genetically generated animal models of disease provided in ENH 722. (Course is scheduled with IBS 701).

ENH 722. Integrated Biomedical Science for Environmental Health III. 3 Hours.

The purpose of this course is to integrate the anatomic, physiologic, pathophysiologic and pharmacologic principles of molecular, cellular, whole tissue and organ biology. The material mastered in this course builds upon the principles learned in ENH 721 and will facilitate understanding in genetic-based disorders and genetically generated animal models of disease provided in this course. (Course is scheduled with IBS 702).

ENH 763. Aerosol Technology. 3 Hours.

Defines properties and behavior of aerosols from industrial hygiene and environmental perspectives. Reviews fundamental particle descriptions and critical fluid properties affecting particle behavior. Methods of defining particle size and particle behavior. Methods of defining particle size and size distribution and theories of particle kinetics and their application to particle disposition and collection.

Prerequisites: ENH 661 [Min Grade: C] and ENH 662 [Min Grade: C]

ENH 770. Advanced Topics in Environmental Disasters in PUH. 3 Hours.

Examines emerging public health challenges posed by incidents involving chemicals, radiation and biological agents. Students are provided with the opportunity to undertake guided research on current topics in the field and discuss their findings with graduate students and faculty members. In addition, students engage in an advanced in-class group exercise based on a realistic disaster or emergency scenario. NOTE: If course prerequisite of ENH 610 not met, permission of instructor is required.

Prerequisites: ENH 610 [Min Grade: C]

ENH 780. Seminars in Free Radical Biology and Medicine. 1 Hour.

This course will consist of research seminars presented primarily by leading national and international scientists working in free radical biology and medicine. These seminars are interactive with questions being asked throughout the presentation. Preq: Requires permission of instructor.

ENH 781. Mech Redox Signaling. 1 Hour.

This course will consist primarily of student presentations of peer-reviewed journal articles and of their research projects. The overall objective of this course is for the student to develop critical thinking skills in the analysis of published research in an area related to their own dissertation research. This course will be graded as Pass/Fail. Preq: Permission of instructor required.

ENH 782. Free Radical Chem & Biochem. 2 Hours.

This course is for students to gain expertise in the chemical and biochemical reactions of free radicals as they occur in biological systems. Students should be able to critically evaluate the literature with respect to free radical chemistry principles in the experimental design for their own dissertation research. Course will be graded by letter. Preq: Completion of first year IBS or CMB or permission of instructor.

ENH 783. Free Radical in Health & Disease. 2 Hours.

This course is for students to understand the roles that free radicals play in biological systems both in the maintenance of normal physiology via regulated cell signaling and in contributing to pathology through loss of this regulation. Students should be able to critically evaluate the literature with respect to the roles of free radicals in health and understanding into their own dissertation research. Course will be graded by letter. Preq: Completion of first year IBS or CMB or permission of instructor.

ENH 790. Seminar: Current Topics in ENH Sciences Research. 1 Hour.

Interactive forum in which graduate students and faculty discuss dissertation research projects and topics related to the field of Environmental Health Sciences Research through presentation of journal articles. Course is designed to develop oral communication skills for presenting scientific material to peer groups. Presentations by graduate students are followed by discussion and questions. Preq: Permission of instructor required.

ENH 791. Advanced Environmental Health and Toxicology Seminar. 1 Hour.

Facilitates critical review of recent referred publications in toxicology and presentations of research data. Students exposed to advanced knowledge and diversified subjects. Preq: ENH 650, ENH 651 or ENH 750 or permission of instructor.

Prerequisites: ENH 650 [Min Grade: C] and ENH 651 [Min Grade: C] or ENH 750 [Min Grade: C]

ENH 793. DrPH Practicum. 6 Hours.

Field experience course that bridges professional academic preparation and advanced public health practice. A final grade for the course will be awarded by the faculty practicum advisor and based upon the practicum mentor/supervisor's evaluation and the student's final product.

ENH 796. Environmental Toxicology Laboratory Rotations. 3 Hours.

Doctoral laboratory rotations in Environmental Health Sciences. Required for First and Second year PhD students in the Industrial Hygiene and Environmental Management and Policy foci. Preq: Permission of instructor required.

ENH 798. Doctoral Level Directed Res. 1-9 Hour.

Independent study with guidance of appropriate faculty.

ENH 799. Dissertation Research. 1-9 Hour.

Research for dissertation under the direction of the dissertation committee. Preq: Must be admitted to candidacy before registering for this course.

Prerequisites: GAC D

ENT-Technology Entrepreneurship Courses

ENT 526. Practicum in Commercialization. 3 Hours.

This course offers qualified students the chance to gain first-hand experience in product commercialization while receiving academic credit. Students will work in cross-disciplinary teams with undergraduate senior students in engineering to develop a commercialization plan corresponding to an original product design.

ENV-Environmental Science Courses

EPI-Epidemiology Courses

EPI 600. Intro to Epidemiology. 3 Hours.

Principles of epidemiologic thinking. Measures of disease frequency and association. Determinants of disease and distribution of factors influencing health and disease in populations. Epidemiology of disease of public health importance today. This course is a CORE requirement for non-Epidemiology MPH majors.

EPI 601. Vaccinology. 3 Hours.

Introduction to the principles underlying disease control and prevention using vaccines. Review of major vaccine preventable diseases as well as modern vaccine research endeavors.

EPI 602. Epidemiology of Chronic Diseases. 4 Hours.

Application of epidemiologic principles to consideration of cancer, cardiovascular diseases, other chronic diseases. Emphasis on classification, rates, association, etiology, prevention, and control. Pertinent literature critically reviewed.

Prerequisites: EPI 600 [Min Grade: C] or EPI 601 [Min Grade: C]

EPI 603. Injury-Epidemiologic Principles and Prevention Strategies. 3 Hours.

Concepts and methods of epidemiology applied to injury; epidemiology of major injury types, utilization of injury data sets; development and evaluation techniques of preventive strategies. Preq: EPI 600 or EPI 601 recommended but not required.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]

EPI 604. Infectious Disease Surveillance and Control: Field Studies in Developing Countries. 3 Hours.

The primary focus of the course is vector ecology and biology, infectious disease surveillance and control, and water and sanitation in a developing country, with an emphasis on field and community-based learning. This class will take place in Jamaica and you must be accepted by the Sparkman Center for Global Health.

EPI 605. Epidemiology of Infectious Disease. 4 Hours.

Introduction to basic principles of infectious disease epidemiology, surveillance, and control. This course will also include critical analysis of the magnitude, distribution, risk factors, and public health significance of selected infectious diseases in community and institutional settings. While the primary geographic focus is the U.S., international comparisons and perspectives will be included. Primary attention is neither on research methods nor on clinical and pathologic aspects of disease.

Prerequisites: EPI 600 [Min Grade: C] or EPI 601 [Min Grade: C]

EPI 607. Fundamentals of Clinical Research. 3 Hours.

This course will provide an overview of principles and practices related to the study of determinants and outcomes of medical interventions. Methods for conducting epidemiologic research in the "clinic", assessing the validity of diagnostic and screening tests, measuring therapeutic efficacy and safety, and describing the natural history of disease will be reviewed. NOTE: Introductory training in epidemiology (e.g., EPI 600 or EPI 610) is recommended but not required.

EPI 609. Pharmacoepidemiology and Comparative Effectiveness Research. 3 Hours.

This course will provide an overview of epidemiologic methods applied to the study of utilization and safety of drugs in large numbers of individuals and an overview of issues and methods used in comparative effectiveness research on drugs, other medical interventions and medical care delivery.

Prerequisites: EPI 610 [Min Grade: C] and EPI 610L [Min Grade: C] and BST 612 [Min Grade: C]

EPI 610. Prin of Epidemiologic Research. 4 Hours.

Concepts and methods of epidemiology. Measures of disease frequency, study design and analysis, indices of disease and health; overview of major categories of acute and chronic disease, analysis of the epidemiologic data sets. Core requirement for Epidemiology majors.

EPI 610L. Principles of Epidemiologic Research - LAB. 0 Hours.

Principles of Epidemiologic Research lab that must be taken with EPI 610.

EPI 611. Data Management of Epidemiologic and Clinical Study. 4 Hours.

Epidemiology is a combination of a subject matter science and research methodology. EPI 611 focuses on the latter component. The course extends knowledge of study designs introduced in EPI 610 as applied to human populations, including randomized trials and four types of observational studies (cohort, case-control, cross-sectional, ecological). Since cause-and-effect relations are at the heart of epidemiologic research, numerous related topics are taught in EPI 611 including causal inference, bias, and effect modification. Descriptive data analysis methods are integrated within each type of design. Preq: EPI 610.

Prerequisites: EPI 610 [Min Grade: C]

EPI 611L. Epidemiology Design and Analysis Lab. 0 Hours.

EPI 611 course and lab will focus on the research methodology for designing, implementing, analyzing and interpreting epidemiologic studies including randomized clinical trials and observational studies (case-control, cohort and cross-sectional).

EPI 614. EPI Methods Applied CER. 2 Hours.

This course will focus on methodological issues pertaining to the design, analysis, and interpretation of comparative effectiveness research studies. Special focus will be placed on comparative effectiveness research studies using a non-experimental design and large data base analyses.

EPI 615L. Ecology & EPI Arthrop Lab. 0 Hours.

This lab will provide students the hands on experience to identify both arthropod and pathogens and is designed to re-enforce the lecture topics of this class.

EPI 616. Environmental Epidemiology. 3 Hours.

Design and conduct of studies examining health effects of environmental exposures. Strengths and limitations of research strategies and interpretation of study results. Areas of interest include air and water pollution, lead, and biological marker outcomes.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]

EPI 618. Fieldwork in Public Health. 2 Hours.

Application of public health principles in communicable disease control and environmental health programs carried out at Jefferson County Department of Health. NOTE: Students not meeting the course prerequisites must get Permission of instructor to enroll.

Prerequisites: EPI 605 [Min Grade: C] and EPI 610 [Min Grade: C]

EPI 621. HIV/AIDS and STDs. 3 Hours.

Basic biology and pathogenesis, historical and current trends, domestic and international epidemiology, determinants of spread, immunogenetics and host susceptibility, options for prevention, surveillance and control of sexually transmitted diseases (STD's) and HIV/AIDS. NOTE: Open to Plan A and second year Plan B students, individuals with knowledge of subject matter or permission of instructor.

EPI 623. Intro SAS Software. 1 Hour.

The Introduction to SAS Software course will run for seven two-hour sessions. The first hour will be dedicated to lectures that will include writing and running SAS codes by the instructor. In the second hour, students are expected to perform a series of tasks in class.

EPI 625. Quant Methods in Epidemiology. 3 Hours.

An introduction to multivariate techniques and survival analysis as they pertain to epidemiologic data and critical reading of corresponding literature, specifically, logistic regression, log-linear modeling, Poisson regression, life tables, Kaplan-Meier survival curves, and Cox proportional hazards modeling.

Prerequisites: EPI 610 [Min Grade: C]

EPI 626. Introduction to Data Analysis with SAS. 2 Hours.

The general content will be basic SAS programming focused on fundamental statistical procedures. Upon completion of the course, the student should be able to do simple analysis and programming when given a SAS data set, and complete exercises from more advanced classes in epidemiology and biostatistics.

EPI 627. Data Anal in Epi Studies. 3 Hours.

Analyze data from an epidemiologic study, addressing a specific questions, and prepare a manuscript from the analysis. There are 3 possibilities regarding choice of data: 1) from a list of the instructor's datasets, 2) public use data, 3) from the student's research. Students working on an MSPH or another degree project may use data for that degree-project with approval of their advisor and course master. Upon completion of the course, the student should be able to analyze data from an epidemiologic study and prepare a manuscript.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] and EPI 610 [Min Grade: C] and EPI 611 [Min Grade: C] and EPI 625 [Min Grade: C] and (BST 626 [Min Grade: C] or EPI 626 [Min Grade: C])

EPI 635. Genetics in Public Health. 2 Hours.

This course will provide a topical overview of issues in public health genetics. The purpose of this course is to introduce students to the complex issues involved in applying and integrating genetic technology and information into public health.

EPI 640. Cancer Epidemiology. 2 Hours.

This course will address methodologic and substantive issues in cancer epidemiology. The content will include definition, biological origins and pathological and clinical aspects of cancer; an introduction to information sources and methods in cancer epidemiology; the global burden of cancer; descriptive epidemiology and major risk factors for various forms of cancer; strategies for cancer prevention and the role of epidemiology in developing and evaluating those strategies. NOTE: Non-Degree students and interested students in other programs and schools are required to get instructors permission before attempting to register.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]

EPI 680. Topics in Clinical Research. 2 Hours.

Provide health sciences professionals interested in clinical trials, clinical epidemiology, and other forms of population research with both essential principles and specific technical knowledge in a variety of areas relevant to the conduct of biological and behavioral investigation of human subjects. NOTE: Limited to health professionals planning clinical research careers who have been accepted into the MSPH in Clinical Research. This course begins in the Spring term and extends into the Summer term. Registration for this course is during the Summer semester. Please contact the Program Coordinator for the course syllabus and course schedule.

EPI 681. Special Topics in Epidemiology Research. 3 Hours.

To engage infectious disease research practice encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. Doctoral students are expected to engage in supervised research. NOTE: Permission of instructor as well as completion of EPI 605 is required for students interested in EPI 681.

Prerequisites: EPI 605 [Min Grade: C]

EPI 682. Gorgas Course in Tropical Med. 3-9 Hours.

Hands-on exposure to tropical diseases and emerging pathogens in various teaching formats: didactic lectures, roundtables, laboratory work, clinical and hospital rounds, case conferences, computer training, field fied trips and independent study. Course is held in during the Spring Term in in Lima, Peru. NOTE:9 hours (3 or Course can be taken for 3, 6 hours are also accepted with or 9 hours; however, evaluation will be restricted to selected sections of the course). course. Spring (Freedman).

EPI 695. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 696. Masters Epidemiology Seminar. 3 Hours.

Critical evaluation of selected epidemiologic papers from published literature. Consideration of composition, study design, and validity of analysis. Editorial review and disposition of manuscripts.

Prerequisites: EPI 610 [Min Grade: C] and EPI 610L [Min Grade: C] and EPI 611 [Min Grade: C]

EPI 697. Internship. 3 Hours.

Field experience under joint direction of appropriate public health faculty member and qualified specialists working in selected aspects of public health.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

EPI 698. Master's Level Directed Research Epidemiology. 1-9 Hour.

Independent study with guidance of appropriate public health faculty.

EPI 699. Master's Level Project Research Epidemiology. 1-9 Hour.

Research for project under direction of research committee.

EPI 703. Special Topics in the Epidemiology of Chronic Disease. 3 Hours.

To provide the student with information about grant writing and practice in preparing a grant proposal for submission. The proposal must relate to an epidemiologic topic. Human subjects issues are discussed. NOTE: Must be a doctoral student or obtain permission of instructor to enroll.

EPI 704. Advanced Epidemiologic Methods. 3 Hours.

This course provides an advanced introduction to fundamental epidemiologic concepts and methods, including causal inference, bias, and study design. This course is the first course in the sequence of the three required core epidemiology courses for doctoral students in epidemiology.

EPI 706. The Epidemiology of Cardiovascular Disease. 2 Hours.

The purpose of this course is to provide exposure to the epidemiology of cardiovascular disease.

EPI 710. Analysis of Case Control Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from case-control studies. Specific aims are: To outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology. Preq: Requires permission of instructor.

EPI 712. Nutritional Epidemiology. 3 Hours.

Nutritional epidemiology will cover core concepts in human nutrition including nutrient classification, nutrient sources, nutritional deficiencies, nutritional excesses, recommended daily allowances, basic anthropometry, dietary assessment methods in free-living populations, validation of dietary assessment methods, identification of biomarkers of dietary intake, study designs used in nutritional epidemiology, issues in the analysis and presentation of dietary data, diet-disease associations, gene-diet associations and special topics in nutrition (e.g., folic acid and neural tube defects, fatty acids and the metabolic syndrome, diet and obesity, vitamin A and immune function, vitamins and mother-to-child transmission of HIV, etc).

EPI 713. Cancer Epidemiology and Control. 3 Hours.

In this course students will learn what is known about the causes of cancer and the control measures used to decrease cancer incidence, decrease cancer mortality, extend cancer survival, and improve quality of life for cancer patients. Class registration is limited to Epidemiology Doctoral Students only.

EPI 715L. Ecology & EPI Arthrop Lab. 0 Hours.

This lab will provide students the hands on experience to identify both arthropod and pathogens and is designed to re-enforce the lecture topics of this class.

EPI 720. Analysis of Follow-Up Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from follow-up studies. Specific aims are: to outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology.

Prerequisites: EPI 710 [Min Grade: C]

EPI 721. HIV/AIDS and STDs. 3 Hours.

The course will cover the epidemiology, prevention and control of Sexually Transmitted Diseases (STDs) including the human immune deficiency virus (HIV) infection in both the domestic and international settings. EPI 621 is intended as an elective for second year students and students who have a graduate degree in the Medical Health Professions who are enrolled in any degree track in the School of Public Health. It is considered an elective for the MPH and MSPH programs in Epidemiology. EPI 721 is intended only for doctoral students in the School of Public Health.

EPI 731. Genetic Epidemiology. 4 Hours.

This course will cover core concepts of designs, methods and statistical tools in genetic epidemiology studies for determining the contribution of genes to disease risk. Methods for incorporating genetic markers into conventional epidemiologic study designs as risk factors including genetic risk models, familial correlations, migration and admixture, quantitative and qualitative traits, association and linkage analyses in family based designs, allele/haplotype frequency estimation, Hardy Weinberg Equilibrium and linkage disequilibrium and application in both family and population based studies will be discussed. Methods for gene-gene and gene-environment interaction assessment, genome wide association studies are also presented. Preq: College level genetics course; basic knowledge of epidemiology (EPI 600 or EPI 610 or equivalent) and biostatistics (BST 600 or BST 611 or BST 621 or equivalent). Students not meeting the prerequisites must get permission from the instructor.

Prerequisites: (BST 600 [Min Grade: C] or BST 611 [Min Grade: C] or BST 621 [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C])

EPI 731L. Genetic Epidemiology Lab. 0 Hours.

EPI 731 course and lab will cover core concepts of design, methods and statistical tools in genetic epidemiology studies for determining the contribution of genes to disease risk.

EPI 781. Special Topics in Epidemiology Research. 3 Hours.

To engage infectious disease research practice, encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. NOTE: Doctoral students are expected to engage in supervised research and must obtain permission of instructor to enroll in EPI 781.

Prerequisites: EPI 605 [Min Grade: C]

EPI 788. Principles and Methods in Molecular Epidemiology. 4 Hours.

Molecular biology and its relevance to the epidemiology, etiology and natural history of human diseases. The course will develop knowledge and skills in molecular biology, genetics and epidemiology methods, and facilitate the application of this information to evaluate susceptibility, etiology, natural history, treatment, and prevention of diseases. 4 hours (Brown).

EPI 790. Doctoral Seminar in Epidemiology. 2 Hours.

In depth study of several areas of epidemiologic methodology not covered in other courses. Students responsible for selecting and presenting topics. Considerable reading and outside preparation required. NOTE: Requires permission of instructor.

EPI 793. DrPH Practicum. 6 Hours.

Field experience course that bridges professional academic preparation and advanced public health practice. A final grade for the course will be awarded by the faculty practicum advisor and based upon the practicum mentor/supervisor's evaluation and the student's final product.

EPI 795. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 797. Analysis and Presentation of Epidemiologic Data. 2 Hours.

To gain experience with the analysis, interpretation, and presentation of epidemiologic data by successfully analyzing a data set and presenting the results in the form of a publication quality manuscript. NOTE: Restricted to PhD students in Epidemiology. Permission of instructor.

EPI 798. Doctoral Level Directed Research Epidemiology. 1-9 Hour.
Independent study with guidance of appropriate faculty.

EPI 799. Dissertation Research. 1-9 Hour.

Research for dissertation under direction of dissertation committee.

Prerequisites: GAC D

EPR-Educational Psychology Courses

EPR 510. Measurement and Evaluation in Education ECE. 3 Hours.

For early childhood/elementary education majors only. Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Elementary descriptive statistics and measurement techniques used in student evaluation. Quantitative literacy is a significant component of this course (QEP).

EPR 511. Measurement and Evaluation in Education Secondary Ed. 3 Hours.

For secondary education majors only. Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Elementary descriptive statistics and measurement techniques used in student evaluation. Quantitative literacy is a significant component of this course (QEP).

EPR 590. Research & Prgm Eval in Coun. 4 Hours.

This course will provide an introduction to major principles, strategies, and instruments in social science research and program evaluation. Students will become familiar with (1) basic strategies used to conduct research; (2) basic methodology for collecting and interpreting data typically reported in counseling; (3) basic conventions for published reporting research in his/her field of interest; (4) basic program evaluation; and (5) the knowledge and skills to become consumers and producers of counseling research.

EPR 594. Introduction to Educational Research Design. 3 Hours.

Introduction to educational research design purposes and characteristics of research process, types of research approaches and research designs, procedures for collecting, analyzing and evaluating data, critical review of published research, research ethics and institutional review.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C]

EPR 596. Introduction to Qualitative Methods in Educational Research. 3 Hours.

The purpose of this course is to provide a practical introduction to qualitative research and its application in education, social, and behavioral sciences.

EPR 607. Microcomputer Applications to Statistical Analysis. 1 Hour.

Excel and SPSS will be used for statistical analyses and data interpretation. Lab to accompany EPR 608.

Prerequisites: EPR 608 [Min Grade: C](Can be taken Concurrently)

EPR 608. Statistical Methods and Action Research. 3 Hours.

This statistics course will cover descriptive and inferential statistics to include the following: measures of central tendency; measures of variability; frequency distributions; normal curve of distribution; probability; sampling; regression; hypothesis testing; and analysis of variance. Excel and SPSS will be used for statistical analyses and data interpretation.

EPR 609. Statistical Methods and Research in Education: Intermediate. 3 Hours.

This course will cover basic inferential techniques including hypothesis testing and parametric and non-parametric techniques. A significant focus of this course is on assumptions, rationale, application and interpretation of various analysis of variance techniques.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C]

EPR 610. Child Psychology. 3 Hours.

This course covers human development through infancy, preschool, and preadolescence.

EPR 611. Adolescent Psychology. 3 Hours.

This course offers an in-depth examination of selected topics in the psychological, social, emotional, moral, cognitive, cultural and physical development of adolescents and how these aspects affect classroom and school behavior.

EPR 614. Lifespan Human Development. 3 Hours.

The objective of this course is to further students' knowledge of human development, the multidisciplinary study of how people change and how they remain the same over time. Topics to be covered will include developmental theories, biological development, social developing, language development, cognitive development, young adulthood, and aging.

EPR 616. Personality Theories. 3 Hours.

This course covers the major theoretical perspectives of the development of personality.

EPR 622. Learning Theories. 3 Hours.

This course covers the application of learning theories to educational practice, behavioral theories, information processing, biochemical basis of memory and learning, as well as other major learning theories.

EPR 650. Educational and Psychological Testing. 3 Hours.

This course will cover the basic principles, research, and theories on the testing and measurement of psychological and educational constructs. Students should expect to complete the course with knowledge of various techniques for educational and psychological testing, familiarity of several professionally developed tests, in depth knowledge on one test of student's choice, and knowledge of measurement theory which includes reliability and validity.

Prerequisites: EPR 607 and EPR 608

EPR 688. Seminar on Current Issues: Measurement/Eval School. 3 Hours.

Prerequisites: (EPR 410 [Min Grade: C] or EPR 510 [Min Grade: C]) or (EPR 411 [Min Grade: C] or EPR 511 [Min Grade: C])

EPR 691. Independent Readings in Educational Psychology and Research. 3 Hours.

Independent Readings in Educational Psychology and Research.

EPR 692. Introduction to Educational Research Design. 3 Hours.

The purpose of this course is to provide an introduction to research in education and social sciences. Course emphases are how to read, evaluate, and design research.

Prerequisites: EPR 607 [Min Grade: C](Can be taken Concurrently) and EPR 608 [Min Grade: C](Can be taken Concurrently)

EPR 695. Survey Methods in Educational Research. 3 Hours.

Provides an overview of the basic principles, applications, and types of survey research in education. Students completing this course should have basic knowledge of the survey implementation procedures, use of appropriate sampling techniques and principles of survey instrument construction. Students should be able to develop reliable survey items, establish reliability and validity of survey scales and instruments, and demonstrate awareness of ethical issues related to conducting survey research. Finally, students will learn how to evaluate and critique published survey research studies.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 692 [Min Grade: C]

EPR 696. Qualitative Research: Inquiry and Analysis. 3 Hours.

The purpose of this course is to provide an in-depth insight into the history, philosophy and applications of qualitative research. The course provides a structured field experience of designing and conducting a qualitative small-scale research study within a select qualitative approach.

Prerequisites: EPR 596 [Min Grade: C] and EPR 692 [Min Grade: C]

EPR 698. Seminar on Current Issues: Measurement and Evaluation in Schools. 3 Hours.

This course provides advanced training on current issues, policies, and methods in educational measurement and evaluation relevant to classroom teachers.

EPR 700. Data Based Decision Making. 3 Hours.

Provides an overview of key issues related to data-based decision making for students who are interested in moving into leadership positions within their own school and school system. Issues such as Response to Intervention (RTI), progress monitoring, formative and summative evaluation, basic statistical and measurement issues, and other related topics.

EPR 710. Computer Applications and Advanced Statistical Meth. 3 Hours.

Computer Applications and Advanced Statistical Meth.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 609 [Min Grade: C]

EPR 719. Internship and Seminar in School Psychology II. 1-6 Hour.**EPR 728. Seminar on Research in Education. 3 Hours.****EPR 790. Mixed Methods Approaches in Action Research. 3 Hours.**

Application of mixed methods research to designing and conducting action research studies involving collecting and analyzing both quantitative and qualitative data. Types of action research models and their major characteristics; steps in designing and conducting mixed methods action research studies; specific types of mixed methods action research designs; sampling, data collection, analysis, validation, and evaluation of mixed methods action research projects. Applied knowledge of designing and conducting a mixed methods action research study.

Prerequisites: EPR 596 [Min Grade: C] and EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 692 [Min Grade: C]

EPR 792. Mixed Methods Approaches to Educational Research. 3 Hours.

This course will provide an overview of mixed methods research, including the history and philosophy of mixed methods research, relevant emerging literature, types of research problems addressed, types of mixed methods designs, and the writing and evaluation of mixed methods studies.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 596 [Min Grade: C] and EPR 692 [Min Grade: C] and EPR 609 [Min Grade: C]

EPR 793. Doctoral Seminar in Research Evaluation and Design. 3 Hours.**EPR 796. Qualitative Research: Doctoral Seminar. 3 Hours.**

Prerequisites: EPR 608 [Min Grade: C] and EPR 596 [Min Grade: C] and EPR 696 [Min Grade: C]

ES-Earth Science Courses**ES 502. Earth and Space Science for Middle School Teachers. 3 Hours.****ES 609. Directed Readings in Geology. 1-3 Hour.**

Topic(s) to be determined by interest of student and faculty. Permission of instructor required.

ES 698. Graduate Research. 1-8 Hour.

Topics to be determined by interest of students and faculty. Permission of graduate faculty member required.

ES 709. Directed Readings in Geology. 1-3 Hour.

Topic(s) to be determined by interest of student and faculty. Permission of instructor required.

ES 798. Graduate Research. 1-8 Hour.

Topics to be determined by interest of students and faculty. Permission of graduate faculty required.

ESP-Edu School Psychometry Courses**ESP 600. Seminar in School Psychometry. 3 Hours.**

This course is a survey of school psychometry ethics, the historical foundations, guidelines, and standards, legal issues, roles and functions, and contemporary professional issues in the field of school psychometry. Specific items/ideas of discussion will include roles and functions of school psychologists and IDEA 2004 law, NCLB, confidentiality, NASP code of ethics, and cultural and human diversity.

ESP 627. Practicum in Sch Psychometry. 1 Hour.

The purpose of this course is to ensure that the candidate has met proficiency criteria in areas related to the administration, scoring, and interpretation of frequently administered standardized instruments in the following areas: Intellectual/cognitive assessments; Global achievement assessments; Adaptive behavior assessments; Early childhood assessments; Behavioral assessments; Vocational/transition assessments.

Prerequisites: (ESP 600 and ESP 628 and ESP 629)

ESP 628. Indiv Assess Child/Youth I. 3 Hours.

This course is designed to prepare students to assess children and youth in a manner that reflects federal and state mandates and regulations. Students are prepared to appropriately select, administer, and interpret cognitive assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

ESP 629. Indiv Assess Child/Youth II. 3 Hours.

This course is designed to prepare candidates to access children and youth in a manner that reflects federal and state mandates and regulations. Candidates are prepared to appropriately select, administer, and interpret social/emotional, behavioral, and achievement assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

ESP 689. Internship-School Psychometry. 3-9 Hours.

This course is an individualized field-based experience that meets the internship requirements of the state code. Interns are engaged in the full scope of School Psychometry activities including individual assessment, data based decision-making, referral and MEDC meetings, and other appropriate duties.

Experiential Learning Courses**FLC-Freshman Learning Comm Courses****FLL-Foreign Languages Courses****FLL 585. Foreign Language Seminar. 3 Hours.**

Advanced seminar on broad cultural and cross-cultural topics in foreign languages; taught in English, readings and assignment in foreign languages.

FN-Finance Courses**FR-French Courses****FR 501. Pre-Revolutionary France (1610-1789). 3 Hours.**

Literature, culture, and civilization of seventeenth and/or eighteenth-century France reflecting the historical and literary ambience in which Ancient Regime writers, philosophies, and artists worked. Selected works of representative authors. Conducted in French.

FR 502. Post-Revolutionary France (1789-1913). 3 Hours.

Literature, culture, and civilization of late-eighteenth, nineteenth, and early twentieth century France illustrating the impact of the French Revolution on the historical and literary ambience of Europe and the Americas. Selected works vary according to instructor. Conducted in French.

FR 503. Fin-de-Siecle France (1895-1940). 3 Hours.

Major authors and art movements of fin-de-siecle France from La Belle Epoque period through World War I. Selected works of representative authors. Conducted in French.

FR 504. French Literature since 1940. 3 Hours.

Cultural trends and literary movements from World War II to the present, including existentialism and the nouveau roman. Selected works of representative authors. Conducted in French.

FR 505. Francophone Literature. 3 Hours.

French-speaking literature outside France that developed through colonization, decolonization, revolution, and emigration. Representative writers from Francophone countries with emphasis on Africa and the Caribbean. Selected works of representative authors. Conducted in French.

FR 510. Special Topics in French. 3 Hours.

Seminar on individual authors, specific genres, important literary movements, or literary discourse/theory. Selections will vary according to instructor. May be repeated for credit. Conducted in French.

FR 512. French Civilization: Pre-Revolutionary. 3 Hours.

Historical and cultural foundation of France from the conquest of Julius Caesar to the French Revolution. Conducted in French.

FR 513. French Civilization: Post-Revolutionary. 3 Hours.

The history and myths of France after the French Revolution that produced French civilization.

FR 590. Study Abroad. 1-6 Hour.

Approved program in a French-speaking country.

FR 599. Individual Studies. 3 Hours.

Individual studies.

FS-Forensic Science Courses**FS 703. Laboratory Rotation III: Drug Analysis. 3 Hours.****FS 704. Laboratory Rotation II: Biological Methods. 3 Hours.****Fellowship Advisory Courses****Foreign Exchange Programs Courses****GBS-Grad Biomedical Sciences Courses****GBS 700. Molecular Neurodegeneration. 3 Hours.**

Course provides clinical exposure to the evaluation and care of patients with cognitive disorders through a combination of didactic sessions and practicum visits, including observation of visits for patients with developmental and age-related cognitive impairment, neuropsychological testing, and functional MRI. Coursemaster: Dr Erik Roberson.

GBS 703. Research Analysis & Presentation. 1 Hour.

This course is designed to help graduate students with oral presentation skills by exposing them to the style of presentation expected in national meetings. This course is open to any JHS/SOM graduate student, but it is a required course for all students in the GBS PBMM Theme.

GBS 704. Introduction to Experimental Medicine. 2 Hours.

This course will consist of interactive lectures, discussions, and scientific literature reviews demonstrating general principles in biomedical sciences and how defects in these processes are related to human disease or birth defects. Faculty will discuss scientific rationale, logic, and approaches to investigate these processes and provide examples from the primary literature or research ongoing in their laboratories. This will include examples of translational studies designed to develop new therapeutic approaches to treat disease. Students will be evaluated based on written assignments, participation in discussions, and on a class presentation. Required for all first year PBMM Theme students.

GBS 705. Biology of Neurodevelopmental Disorders. 3 Hours.

This course will review how normal cellular maturation, signaling, and circuitry are disrupted in a wide variety of neurodevelopmental disorders. Topics will include: Once neurons arrive in their final locations, what events occur to allow for integration into a network, plasticity of circuits (including critical periods of plasticity), and balance of excitation and inhibition? Why is the developing brain sensitive to inflammation, over-excitation, mood stabilizers (as well as antipsychotic medications and other drugs), and malnutrition? How can disruptions in neuronal maturation give rise to distinct neurodevelopmental disorders? Course is typically offered Fall Semester in odd years.

GBS 707. Basic Biochemistry and Metabolism. 2 Hours.

This course is intended to provide students a rigorous background in the principles of biological chemistry. The principles taught are those we believe student should master and include the application of these principles to research protocols and performance. Must be admitted into one of the Graduate Biomedical Sciences (GBS) Themes. Required of all first year GBS students.

GBS 708. Basic Genetics and Molecular Biology. 2 Hours.

This course is intended to provide students with a strong foundation in basic genetics and basic molecular biology so that students are able to apply and understand fundamentals in their lab research. Must be admitted into one of the Graduate Biomedical Sciences (GBS) Themes. Required of all first year GBS students.

GBS 709. Basic Biological Organization. 2 Hours.

This course is intended to provide students with exposure to the fundamentals of basic cell biology and begin to build a foundation of knowledge that will be needed as the student progress along the scientific path. Must be admitted into one of the Graduate Biomedical Sciences (GBS) Themes. Required of GBS first year students.

GBS 710. Cell Signaling. 2 Hours.

This course covers major extracellular and intracellular signal transduction cascades that regulate animal development and physiology. Topics include the mitogen activated protein kinase cascade, transforming growth factor beta, insulin, and cytokines.

GBS 712. Cellular and Molecular Aspects of Developmental Biology. 2 Hours.

The goal of this course is to provide an introduction to the fundamentals of vertebrate developmental biology. The course will consist of faculty lectures and research paper discussion groups covering a broad range of developmental issues from fertilization to organogenesis. Course typically offered Spring Semester, February module.

GBS 713. Cell and Matrix Interactions in Disease and Development. 2 Hours.

This course will cover a combination of basic mechanisms underlying extracellular matrix interactions with cells, and how these go wrong in several disease processes. It will be a series of seminars, followed in the final week, with oral student presentations on the disease of their choice and submission of a one-page summary.

GBS 714. Developmental Neuroscience. 2 Hours.

The course will utilize the scientific literature and faculty lectures to cover a broad range of topics related to the mechanisms of building a brain. The topics covered range from neural induction in early development, to axonal guidance and synapse formation, to neuro-gial interactions in the adult nervous system. Grades will be based on two exams and student participation in class discussions. Course typically offered Spring Semester, March module.

GBS 715. Skeletal Development and Disease. 3 Hours.

This class is designed for understanding Cellular and Molecular Signaling essential for the normal development and remodeling of skeleton and for learning genetic mechanisms associated with skeletal diseases and pathology. Usually offered Spring Semester.

GBS 716. Grantsmanship and Scientific Writing. 2 Hours.

The objective of the course is to teach students how to effectively write grant proposals. This course will provide hands on training in the preparation of a grant application and demonstrate effective strategies for assembling a successful proposal. With guidance from the faculty, the students will write a NIH style proposal on their dissertation research topic. After the proposal is complete, each grant will be reviewed in a mock NIH study section. Based on the comments from the study section, the student will revise the application and submit the proposal to his/her thesis committee as part of the qualifying examination for admittance into candidacy. For years 2 and above. Course typically offered Spring Semester, April module.

GBS 717. Methods and Scientific Logic. 1 Hour.

Methods and Logic in Science is a literature-based class in which students have to critically analyze primary research publications. The overall objective is to teach the students to evaluate the primary literature they will rely on for their careers.

GBS 718. Graduate Histology. 3 Hours.

This course will cover the specialized cell biology and microscopic anatomy for each of the mammalian organ systems, as well as consider current research with regards to each system. The objective is to understand how cells organize into tissues and organ systems and how these systems function in the body, as well as appreciate the microscopic appearance of cells, tissues and organs. Student must have completed the first year of a graduate program and active engagement in research.

GBS 719. Mechanisms and Birth Defects. 2-3 Hours.

Course focuses on the most common mechanisms associated with birth defects from a biological standpoint. Course offered typically every Fall Semester, every odd year.

GBS 720. Genomic Structure and Function. 2 Hours.

This course will cover a wide variety of topics related to this topic, including genetic variation and polymorphisms, alternative splicing, microRNAs, and novel sequencing and microarray technologies. Typically offered Spring Semester, January module.

GBS 721. Genetic Epidemiology. 2 Hours.

This course will cover a wide variety of different bioinformatics applications, which will be taught through use of available on-line bioinformatics resources. The topics covered will include: introductions to large-scale, generic databases at NCBI, European Bioinformatics Institute, SwissProt, PDB, UniProt and Ensembl; Sequence analysis systems such as BLAST, ORF-Finder and GENSCAN, Multiple Sequence Analysis, gene identification in DNA and an introduction to the Human Genome Project; resources that are used in Microarray Data Analysis; Protein sequence analysis using Pfam, Prosite, Prints, Blocks, Protein structure analysis using SCOP, CATH; structural bioinformatics, secondary structure calculation, homology modeling, structure prediction, protein folding, protein-ligand docking and molecular dynamics. Class typically offered Spring Semester, 2nd module.

GBS 722. GGS Bioinformatics. 2 Hours.

This course will cover a wide variety of different bioinformatics applications, which will be taught through use of available on-line bioinformatics resources. The topics covered will include: introductions to large-scale, generic databases at NCBI, European Bioinformatics Institute, SwissProt, PDB, UniProt and Ensembl; Sequence analysis systems such as BLAST, ORF-Finder and GENSCAN, Multiple Sequence Analysis, gene identification in DNA and an introduction to the Human Genome Project; resources that are used in Microarray Data Analysis; Protein sequence analysis using Pfam, Prosite, Prints, Blocks, Protein structure analysis using SCOP, CATH; structural bioinformatics, secondary structure calculation, homology modeling, structure prediction, protein folding, protein-ligand docking and molecular dynamics. Course master: Dr Chiquito Crasto.

GBS 723. Model Systems for Genetic Analyses. 2 Hours.

The course will provide students with an in-depth knowledge of the different animal models used for analyses of gene function and genetic pathways. Topics include transgenic and knockout mouse technologies and strategies, large scale genetic screens in *C. elegans* and *Drosophila*, and modeling human genetic diseases in zebrafish. Course typically offered Spring semester, March module.

GBS 724. Principles of Genetics: Inheritance and Disease. 2 Hours.

Course required for first year GBS GGS theme students and offered to upper-level students as advanced course. This course will cover recessive, dominant, X-linked, and mitochondrial inheritance, as well as basic cytogenetics, chromosome abnormalities, and epigenetics. Course typically offered Fall semester.

GBS 725. GGS Grant Writing. 2 Hours.

The objective of the course is to teach students how to effectively write grant proposals. This course will provide hands on training in the preparation of a grant application and demonstrate effective strategies for assembling a successful proposal. With guidance from the faculty, the students will write a NIH style proposal on their dissertation research topic. After the proposal is complete, each grant will be reviewed in a mock NIH study section. Based on the comments from the study section, the student will revise the application and submit the proposal to his/her thesis committee as part of the qualifying examination for admittance into candidacy. Typically offered Fall Semester.

GBS 726. Advanced Medical Genetics. 3 Hours.

This course will focus on the medical application of advances in genetics and genomics. Topics include chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics, inborn errors of metabolism, current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics, and genomic approaches to diagnosis and risk stratification. Typically offered in Fall Semester.

GBS 727. Advanced Human Genomics. 1-4 Hour.

This course will cover the conceptual basis, major discoveries, and unsolved problems in human genomics, with an emphasis on disease applications. The goal is to make students conversant with the structures, functions, and natural histories of human genomes, the computational and experimental methods used to establish that knowledge, the applications of genomics to medical research, and the broader impacts of genomic research on the community. Each topic will be covered by an approximately 90-minute lecture from a subject-specific PI coupled to reading of pieces of primary literature. Students will also participate in 3 student-led journal clubs in which one or more papers are discussed in detail with the help of the teaching faculty. We will also perform 3 interactive sessions to teach basic computational skills in Unix, Perl and R. Grading will be determined by: discussion interaction, computational problem sets due in weeks 4, 6, and 8, and a ζ final ζ project in which students perform a small but cohesive set of bioinformatic analyses to address a question of their choosing, subject to approval/discussion with the teaching faculty. Format: Each of the 7 weeks will include two, 90 minute lectures performed at UAB. In weeks 2, 4, and 6, we will convene at HudsonAlpha for four-hour sessions. Each four-hour session will include ~1 hour of paper discussion, ~1 hour of teaching on a relevant computational topic, and ~2 hours of hands-on interactive data manipulation with commonly used data types and computational tools. Course meets both on UAB Campus and at Hudson-Alpha in Huntsville. Typically offered during Fall Semester.

GBS 728. Bio-Nano Technology JC. 1-4 Hour.

This journal club will focus on the use of biological materials as paradigms, structural scaffolds, and active elements of nanoscale materials.

GBS 729. Translational Approaches in Neurodegeneration. 3 Hours.

With the current emphasis on "bench to bedside" strategies, successful translational research approaches may be helpful for a productive career in academic and industrial settings. This course uses the field of neurodegeneration as a vehicle for conceptualization to the failures, current challenges, and successes of different translational approaches. This course emphasizes active learning principles by placing students into scenarios of direct relevance to a career in science (e.g., emulation of study section discourse, formal critical debate that happens at international symposia, and informal discussions between colleagues). Course typically offered Spring Semester, Odd Years.

GBS 730. Introduction to Neurobiology (Dauphin Island Course). 3 Hours.

Hands on experiments and classroom lectures onsite at the Dauphin Island Sea Lab. Students live onsite the entire course. Required of first year Neuroscience Theme students.

GBS 731. Principles of Cellular Neuroscience. 3 Hours.

Overview and study of various aspects of cellular neuroscience. Course is required for first year GBS Neuroscience Theme students and is offered as an advanced course for others. Course usually offered mid-October thru late December, Fall semester.

GBS 732. Graduate Neuroscience. 2 Hours.

The module provides the student with an integrated basic and clinical sciences view of the structure and function of the nervous system in health and disease. The module is designed to prepare students for future clerkships by providing them with a working knowledge of the developing and mature nervous system, with a perspective that ranges from molecular to behavioral. The neuroanatomical, neurochemical and neurophysiological aspects of the brain and spinal cord are balanced by large and small group discussions of the pathology and treatment of neurological and psychiatric diseases. This course is required for first year students in the Neuroscience Theme. Course usually offered Spring Semester during months of January and February.

GBS 733. Disease of the Nervous System. 2 Hours.

Major advances have been made in understanding diseases of the nervous system at a cellular and molecular level. Several new findings have had direct therapeutic implications and have resulted in the development of novel drugs or new disease management strategies. This course intends to review the most common brain and CNS disorders. Typically offered Spring Semester, April module.

GBS 734. Neuroscience Historical Literature JC. 1 Hour.

Discussion of historical neuroscience literature, giving students an appreciation of the early foundations of neuroscience research. Required of all first year Neuroscience Theme students.

GBS 736. Cognition Journal Club. 1 Hour.

Journal club exploring various literature on cognition and cognitive disorders.

GBS 737. Neuro Student Summer Seminar Series. 1 Hour.

Seminar series presented by UAB neuroscience students. Two students present each week. Course typically spans approximately 20 weeks from May to September each year.

GBS 738. Experimental Design. 2 Hours.

This course will assist students in the process of designing hypotheses and experiments in the research lab. Course master: Dr Candace Floyd.

GBS 739. Neuropharmacology. 3 Hours.

Advanced course which will focus on the mechanism of action of CNS-active drugs. The first one-third of the course will consist of lectures that emphasize basic principles of neuropharmacology including neurotransmitter and receptor concepts, pharmacokinetics, pharmacodynamics and pharmacogenomics. The next two-thirds of the course will focus on the mechanism of action of different drug classes, including classical behavioral and biochemical studies, as well as genetic and molecular analyses of drug action. In each section, the instructor will give an overview lecture followed by student presentations. Student performance will be evaluated based on homework, oral presentation and written examination. Course typically offered Fall Semester every even year.

GBS 740A. Introduction to Immunology Part 1. 2-4 Hours.

Introductory Immunology is a team-taught survey course that covers basic concepts of innate and adaptive immunity. These integrated series of lectures provide a firm foundation in immunology, especially for those with minimal immunology background, and serve as an important refresher for the developing immunologist. Required for first year Immunology Theme students. Part 1 is usually offered in Fall Semester; Part 2 is usually offered Spring Semester.

GBS 740B. Introduction to Immunology Part 2. 2-4 Hours.

Introductory Immunology is a team-taught survey course that covers basic concepts of innate and adaptive immunity. These integrated series of lectures provide a firm foundation in immunology, especially for those with minimal immunology background, and serve as an important refresher for the developing immunologist. Required for first year Immunology Theme students. Part 1 is usually offered in Fall Semester; Part 2 typically offered in Spring Semester.

GBS 741. Lymphocyte Biology. 2-3 Hours.

The purpose of this course is threefold; 1. to provide students with a basic overview of immunology and neuroscience in conjunction with a specific focus on how neuroinflammatory processes affect the brain, 2. to teach students basic neuroanatomy of the brain, and 3. to have students understand the clinical implications of neuroinflammatory diseases by attending rounds with clinicians. How the immune system influences the brain is an emerging field in neuroscience research. Course typically offered Spring Semester, March module.

GBS 743. Innate Immunity. 2-3 Hours.

The study of innate immunity has made a resurgence in recent years and its critical role, not only in host defense against invading pathogens, but in the development of adaptive immune responses is now appreciated. This course will provide an in-depth look at selected aspects of the innate immune response including the cellular and molecular components critical to its development. The course will involve student presentations on selected topics. Course masters: Drs Alex Szalai and Scott Barnum.

GBS 744. Mucosal Immunology. 2-3 Hours.

The mucosal immune system is essentially the primary site of interaction between invading pathogens and the immune system. Mucosal immunity has always been a strength of the immunology community at UAB and is rarely covered at most other institutions. This class will provide in-depth analysis of the structural features that distinguish the mucosal immune system from the peripheral immune system. Features of innate and adaptive immunity as they relate to mucosal immune responses will also be covered. The course will involve student presentations on selected topics. Course typically offered Spring Semester, April module.

GBS 745. Neuroimmunology. 2-3 Hours.

The purpose of this course is threefold; 1) to provide students with a basic overview of immunology and neuroscience in conjunction with a specific focus on how neuroinflammatory processes affect the brain, 2) to teach students basic neuroanatomy of the brain, and 3) to have students understand the clinical implications of neuroinflammatory diseases by attending rounds with clinicians. How the immune system influences the brain is an emerging field in neuroscience research and is currently not being addressed in a graduate or medical course. Typically offered Spring Semester, February module.

GBS 746. Special Topics in Biomedical Sciences I. 1-4 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 746J. Exercise Medicine Journal Club. 1 Hour.

Exercise training in various forms induces a complex array of coordinated cellular and molecular processes that improve symptoms and comorbidities associated with numerous chronic conditions including musculoskeletal, cardiorespiratory, metabolic, immunologic, and neurologic disorders—and disease risks associated with chronic physical inactivity are widespread. Understanding the biological mechanisms underlying exercise-induced adaptations and their clinical utility in disease treatment and prevention is therefore a truly interdisciplinary effort. Students will interact with scientists and clinicians from several disciplines, and will present and discuss the latest and most impactful exercise-based research in both human and animal model systems. Attendance is required.

GBS 747. Special Topics. 1-6 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 747J. Circadian Clocks Journal Club. 1 Hour.

Circadian Clocks Journal Club. In this journal club, we will bring together researchers with diverse perspectives, specialized techniques, and scientific backgrounds in order to develop a take-home message from recent circadian literature that may be applicable to all of our specific fields. Nearly all organisms possess an endogenous circadian clock that governs a wide array of rhythms, from biosynthetic to behavioral, and synchronizes (entrains) them to the 24-h environmental day-night cycle. The central circadian clock in the suprachiasmatic nucleus of the hypothalamus orchestrates rhythms in many peripheral clocks located throughout the brain and body, resulting in 24-h regulation of many physiological processes (including sleep and reproduction, metabolism, organ function, and seasonal behaviors). This regulation allows for a predictive, rather than purely reactive, homeostatic control. In humans, dysregulation of the circadian system has been implicated in some insomnias, cancers, affective disorders, and in aging and cognitive impairment. The discovery and characterization of oscillating "circadian clock" genes during the last decade has been largely due to cross-talk between researchers working on fruitflies and mice; this approach fueled insights into the likely design principles underlying the intracellular oscillatory machinery. Similar discussion and collaboration at a systems level of analysis may lead to new discoveries and approaches. Students will choose and present papers from any field as long as there is a circadian component to the paper. Course typically offered Spring Semester.

GBS 748. Special Topics. 1-4 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 749. Special Topics in Biomedical Sciences IV. 2-3 Hours.

Varying topics offered to advanced graduate students in the GBS program.

GBS 750. Nerves, Muscles and Bones. 2 Hours.

This course will include an overview of basic cellular physiology and the neurological and musculoskeletal systems. Neurologic and neuromuscular diseases such as Parkinson's, multiple sclerosis, and myasthenia gravis will be discussed, along with primary myopathies (e.g., dystrophinopathies), joint diseases (osteoarthritis, acute arthritis, arthropathies, fibrosing disorders), and bone diseases (osteoporosis, osteopetrosis, osteonecrosis). Course usually offered Spring Semester, January module.

GBS 751. Heart, Lung and Kidney. 2 Hours.

Course will introduce the exquisitely integrated cardiovascular, respiratory, and renal systems. This integration will be reinforced with examination of numerous disease states (acidosis, hypertension, heart failure, atherosclerosis/chronic vascular inflammation, genetic and environmentally-induced pulmonary diseases, chronic kidney disease). Usually offered Spring Semester, February module.

GBS 752. GI, Endocrine and Immune System. 2 Hours.

This four-week course will examine the physiology and pathobiology of the gastrointestinal tract, followed by sub-modules focused on endocrinology and immunology. Students will learn how the endocrine system integrates homeostasis of multiple organ systems through a comprehensive approach—influencing all systems examined in the previous modules. The mechanisms and consequences of abnormal GI function (e.g., peptic ulcer disease, diarrhea), endocrine dysregulation (type II diabetes mellitus, gigantism, hyperthyroidism, Cushing's syndrome), and immune dysfunction (HIV, rheumatoid arthritis, type I diabetes mellitus) will be discussed. The course is divided into three blocks (GI, Endocrine, & Immune)—each with a block leader. Requirement This course is designed for doctoral students admitted to the Graduate Biomedical Sciences (GBS) PhD program and is required for GBS students in the Pathobiology and Molecular Medicine (PBMM) theme. GBS students from other themes are welcomed and encouraged to take this course as an elective. Individuals outside the GBS program must contact the course director before enrolling in the course to check availability. Typically offered Spring Semester, March module.

GBS 753. Pharmacology and Molecular Medicine. 2 Hours.

Students entering this fourth module in a series will be expected to have a thorough understanding of normal and abnormal organ system function as discussed in the three-modules described above. Lectures will build on that foundation to cover recent advances in drug design and development based on approaches of molecular pharmacology and molecular medicine. In addition, drug targeting strategies that take advantage of specificity in cellular structure and cell signaling processes will also be discussed. Usually offered Spring Semester, April module.

GBS 754. Autophagy in Disease and Medicine. 3 Hours.

This course reviews the pathobiology of autophagy and how it is essential for survival, differentiation, development, and homeostasis and how it serves an adaptive role to protect organisms against diverse pathologies, including infections, cancer, neurodegeneration, aging, and heart disease. Usually offered Fall Semester.

GBS 755. Integrative Bioinformatics. 3 Hours.

The purpose of this course is to equip participants with understanding of informatics infrastructure for biomedical applications with practical knowledge on how to program this environment. Specifically, the participants are exposed to practical use of semantic web and cloud computing technologies and resources. A successful participation signifies that the participant is fully equipped to develop informatics applications that make the most of biomedical data resources and bioinformatics analytical services.

GBS 756. Cardiometabolic Disease Journal Club. 1 Hour.

The review of recently published articles focused on understanding the complex gene-environment interactions that contribute towards common metabolic diseases, such as obesity, diabetes, and cardiovascular disease. Articles most commonly reviewed range from the whole organism (e.g., physiology, energy balance, metabolism, endocrinology, genetics) to individual cells (e.g., cellular metabolism, signal transduction, and transcriptional regulation), in both animal models and humans. In addition, articles investigating novel lifestyle (e.g., diet and/or exercise), pharmacological (e.g., appetite suppressants), and surgical (e.g., gastric by-pass) interventions designed to treat cardiometabolic diseases are routinely discussed. Typically offered Fall Semester.

GBS 757. Biology of Disease. 3 Hours.

Biology of Disease is a comprehensive course in general pathophysiology designed for graduate students in the GBS program or other science related graduate programs. This course will begin with an overview of general anatomy and histology and then will investigate basic pathophysiologic principles emphasizing pathogenic mechanisms and clinically important diseases where current research areas will be highlighted. The biomedical science students will learn the mechanisms involved in disease processes and will develop an understanding of diseases and clinical medicine to help them converse knowledgeably with medical colleagues and target their research towards clinically relevant issues. Requirements: It is expected, although not required, that students will have a background in biochemistry, cell biology, microbiology, and immunology and will have successfully completed the first year GBS courses. Usually offered Fall Semester.

GBS 758. New Perspectives in Cardiovascular Biology. 2 Hours.

The course will consist of didactic lectures given by faculty members from UAB and guest lecturers from other institutions on a specific topic in the field of cardiovascular biology, which will then be followed up by student presentations of original research articles which are related to the presented subject matter and that place the discussed topic into the context of human health and disease. This format will allow for students to first gain a solid understanding of normal and pathological aspects of cardiovascular physiology, the basic experimental approaches that can be used in "bench to bedside" studies and the current perspectives on a broad range of current "hot" topics in the field. In addition, the course will include fundamental concepts of how to: i) review a research paper; ii) present a journal club article; iii) how to prepare for a post-doctoral interview. This course will be guided by the Course Director and other faculty members who will assist in the selection of relevant readings and facilitate in-class discussions among the students.

GBS 759. Developing Presentation Skills for Microbiological Research. 1 Hour.

The goal of this course is to provide students with the skills to critically evaluate and present their research. In initial sessions, students will learn how to give an effective presentation. Students will then develop their own presentation with advice from a student advisor as well as the course director or other faculty members. Following the presentation, students will address questions from an audience of students and faculty. The students and faculty will also provide written evaluations of the presentation. The student advisor will develop skills in critiquing presentations and introducing a scientific speaker to an audience. Course usually offered Fall and Spring Semesters.

GBS 760. Prokaryotic Genetics and Molecular Biology. 2 Hours.

This course is designed to familiarize students with advanced knowledge in recombination, transcription, translation, regulation of gene expression, transport mechanisms and protein export. The students will learn the fundamental principles how structural components of bacterial cells are built and how bacteria-specific metabolic pathways can be exploited by antibiotics. We will also cover state-of-the-art technologies such as whole genome sequencing, microarray experiments, methods to analyze protein-protein interactions and the metabolome of bacteria. In this course, we emphasize the training of critical thinking and foster the ability of the students to design their own experiments to solve scientific problems in bacteriology. The goal of the course is to provide a strong foundation for advanced bacteriology classes and for doing research in any bacteriology lab.

GBS 762. Virology. 2-3 Hours.

This course is designed to familiarize students with the general steps involved in viral lifecycles and use this knowledge as a framework for understanding the similarities and differences in the lifecycles of (+) and (-) stranded RNA viruses, DNA viruses, and retroviruses. The course also covers the role of viruses in oncogenesis, the origin and evolution of viruses, the innate immune response to viral infections, and the development of antiviral chemotherapeutics. The goal of the course is to provide a strong foundation for advanced virology classes and to provide students with enough background in virology to be comfortable teaching in a college level microbiology class. Typically offered Spring Semester, February module.

GBS 763. Microbial Pathogenesis. 2-3 Hours.

The course in Bacterial Pathogenesis contains introductory lectures that provide an overview of major concepts including virulence factors, and host immune mechanisms. Most of the lectures describe the unique aspects of specific bacterial (and fungal) pathogens. Although many of the most important medical pathogens are covered, the course focuses especially on those bacterial and fungal pathogens studies most intensively at UAB. Each week students will be given a quiz based on the lectures of the preceding week. To answer the questions, an understanding of the lecture material will be needed. The questions are designed to help the students thinking about hypotheses and concepts in Bacterial Pathogenesis. The final grade in the course will be based on these quizzes and the student participation in discussions. Course usually offered in Spring Semester, March module.

GBS 764. Structural Biology for Micro. 2-3 Hours.

Structural biology is central to understanding the function of biological macromolecules and is to relevant to all fields of modern biological science. This course will provide a basic introduction to the elements of structural biology including the levels of protein structure (primary, secondary, tertiary, quaternary), the basis of structure determination by X-ray crystallography, NMR, and cryo-electron microscopy, and will explore the structure/function relationships in select systems. Course usually offered Spring Semester.

GBS 765. Hybrid Structural Techniques as Applied to Cellular & Molecular Biology. 3 Hours.

This course will focus on the use of X-ray crystallography, Cryo-Electron microscopy and Image Reconstruction, NMR, and Mass Spectrometry to obtain structures of biological macromolecules. Each component will be taught separately. Each module will focus on insuring the student has a basic understanding of the essential principles of the technique and its practical application. Examples will generally be drawn virology and immunology. Students will be actively involved through assigned problem sets and in class discussion. This material in this course will be targeted towards second year graduate students and non-specialists. Course typically offered Fall Semester, even years.

GBS 766. Inflammation Journal Club. 1 Hour.

Inflammation Journal Club presents the state of the art papers that fall broadly in the area of inflammation, which include aspects of basic cellular and molecular mechanisms, animal models and immunopathology of human diseases including, infectious diseases, cancer and chronic lung diseases. Course typically offered Fall and Spring Semesters.

GBS 767. Structural Basis of Viral Replication. 3 Hours.

This course will focus on understanding the mechanistic basis of viral replication through the lens of structural biology. The course will cover mechanisms of viral entry, transcription, translation, genome replication, transport, assembly, and exit as well as immune evasion. The focus will be on systems where a particular step in the replication cycle is well understood rather than on any particular virus family. Students are expected to have a basic knowledge of virology and will acquire sufficient knowledge of the techniques of structural biology to critically analyze primary literature.

GBS 768. Communicating Science: Reading, Writing and Presentation. 2 Hours.

This first year graduate level course will teach students how to make formal scientific oral presentations and how to write a paper for publication in a scientific journal.

GBS 769. Carcinogens. 3 Hours.

The course covers advanced topics from oncogenes and tumor suppressor genes to cell cycle and DNA repair. Course typically offered Fall semester, even years.

GBS 770. Pathobiology of Cancer. 2-4 Hours.

Students will gain an understanding of the pathology of cancer in general and an appreciation of the gross, histologic and molecular pathology of cancers of multiple organs, including the brain, lungs, breast, prostate, colon, bone, bone marrow and lymph nodes. The students will learn the basis of the pathologic classification of cancers of particular organs, including the gross, microscopic and molecular features that aid in classification. Then the clinical implications (i.e., prognostication and treatment) of the classification systems will be discussed. Also, current controversies and topics of research interest may be introduced. In addition, several lectures will focus on the epidemiology of cancer and translational research in cancer, including animal models of cancer. Course required of all first year CANB Theme students. Course usually offered Spring Semester, March module.

GBS 774. Cancer Immunology. 2-3 Hours.

A summary of key signaling pathways that regulate cancer cell growth, death and behavior will be presented. An intense evaluation of mechanisms involved in pro- and anti-tumor immunology will be presented along with theoretical aspects of cancer immunotherapy. Required for first year CANB Theme Students. Course usually offered Spring Semester, February module.

GBS 775. Cancer Treatment. 3 Hours.

Students will study current theories regarding chemotherapy, radiation therapy, chemoprevention and imaging. Students will also be exposed to state-of-the-art for each of these treatment/diagnostic modalities. This course uses a combination of textbook and literature readings and classroom discussions to provide students with an understanding of the different classes of drugs used to treat cancer. The course focuses on the mechanisms of drug action, the basis for selectivity and therapeutic applications. Traditional as well as novel approaches to therapeutics will be discussed, as well as the role of drug resistance and strategies for its management. Course usually offered Spring Semester.

GBS 776. Cancer Biology Journal Club. 1 Hour.

This course focuses on current topics in Cancer Biology. Students take turns presenting a paper from the current literature addressing an aspects of cancer biology. Topics include cancer genetics and genomics, cell growth and signaling pathways, cancer metastasis and therapeutics. Students are expected to actively participate in the critical analysis of each paper presented. Course typically offered Fall and Spring Semesters.

GBS 777. Cancer Biology Seminar. 1 Hour.

Seminars on various topics in cancer biology or other biomedical science topics. Students will attend a seminar offered by a Joint Health Sciences department/theme, keeping a journal that includes each seminar date, title and a brief synopsis of the seminar. The journal will be turned in to the theme program office mid-semester and at the end of the semester. Typically offered Fall and Spring Semesters.

GBS 778. Cancer Metastasis. 3 Hours.

The majority of cancer associated deaths are due to complications arising from metastatic disease. The process of metastasis is highly selective and is the result of a tumor cell completing a series of complex interrelated steps. Despite our improved knowledge of this disease, we still do not fully understand the molecular mechanisms regulating tumor progression and metastasis. This advanced course will cover basic mechanisms of how a tumor cell progresses from growth at the primary site to forming an overt lesion in a secondary organ and techniques used to study this disease. Course typically offered Spring Semester, every odd year.

GBS 779. Translational Research in Cancer. 3 Hours.

This course covers topics from setting a team, animals, to clinical models. Course typically offered Fall Semester, odd years.

GBS 780. BSB Lab Methods. 2-3 Hours.

This is a laboratory course, designed ONLY for first year BSB Theme students, in which students will gain hands-on experience in: cloning and expression of recombinant proteins, protein purification, mass spectrometry, NMR spectroscopy, crystallography, recombineering to produce knockout and knockin vectors, gene targeting in murine ES cells, microinjection of ES cells into blastocysts, genotyping of knockin/knockout mice, reprogramming of skin fibroblasts into induced Pluripotent Stem Cells (iPS). Course typically offered Fall Semester.

GBS 781. Molecular Enzymology. 2 Hours.

Course intends to touch on the various mechanisms of enzymes in biological systems. Course required for first year BSB Theme students. Typically offered Spring Semester, January module.

GBS 782. Molecular Genetics. 2 Hours.

Course studying the structure and function of genes at a molecular level. Typically offered Spring Semester, March module.

GBS 783. RNA Biology. 2 Hours.

Course exploring the biology, biochemistry, structure and function of RNA at a research level. Course required for first year BSB theme students. Typically offered Spring Semester, February module.

GBS 784. Stem Cell Biology. 2 Hours.

This course will explore the derivation, manipulation, and differentiation of embryonic, fetal, and adult stem cells in both mice and humans. Topics to be discussed include stem cell self-renewal, teratoma formation, hematopoietic stem cells, neural stem cells, trans-differentiation, nuclear transfer, and reproductive and therapeutic cloning. The course will be a mixture of instructor lectures and interactive journal club style presentations from the current stem cell literature by the students. Students will be evaluated based upon their journal article presentations, participation in class discussions, quizzes, and attendance. Typically offered Spring Semester, April module.

GBS 785. Structural Biology. 2 Hours.

This course covers various aspects of the structure and function of molecules, including proteins and nucleic acids. Typically offered Fall, every Even Year.

GBS 786. Special Topics in Structural Biology. 1-4 Hour.

Varying topics in structural biology offered to advanced graduate students in the GBS program.

GBS 786J. Journal Club in Structural Biology. 1 Hour.

The journal club will discuss peer-reviewed scientific articles of interest to the structural biology community. In general, the majority of articles will contain macromolecular structural data determined by one or more of the following methods: X-ray crystallography, cryo-EM, NMR and Mass Spectroscopy. It will help students become familiar with our present understanding of the structure/function for different classes of macromolecules and gain an appreciation of state-of-the-art biophysical techniques available to determine macromolecular structures. Typically offered in Fall and Spring semesters.

GBS 787. Special Topics in Advanced Immunology. 1-4 Hour.

Varying topics offered to advanced graduate students.

GBS 788. Special Topics in Advanced Neuroscience. 1-4 Hour.

Varying topics offered to advanced graduate students.

GBS 789. Evolutionary Developmental Biology. 2 Hours.

The class is aimed at introducing the concepts of evolution and describing how changes in gene expression and function during embryonic development represent the central molecular mechanism underlying evolution.

GBS 790. Clinical Evaluation of Cognitive Disorders. 2 Hours.

This course will provide clinical exposure to the evaluation and care of patients with cognitive disorders through a combination of didactic sessions and practicum visits, including observation of visits for patients with developmental and age-related cognitive impairment, neuropsychological testing, and functional MRI. Typically offered in Spring semester.

GBS 791. Graduate Neuroscience Discussion. 1 Hour.

Companion course to GBS 732-Grad Neuroscience and must be taken the same semester as GBS 732. Spring Semester / January thru February / Course master: Dr Gwendalyn King.

GBS 792. CMDB Seminar. 1 Hour.

Seminars on various topics in cellular and molecular biology or other biomedical science topics. Students will attend a seminar offered by a Joint Health Sciences department/theme, keeping a journal that includes each seminar date, title and a brief synopsis of the seminar. The journal will be turned in to the theme program office at the end of the semester. Usually offered in Fall and Spring semesters.

GBS 793. Alzheimer's and Frontotemporal Dementia Journal Club. 1 Hour.

Discussion of important current research on Alzheimers disease and frontotemporal dementia, with a focus on basic and translational science. Offered all semesters / Course master: Dr Erik Roberson.

GBS 794. Lab Rotation 4. 1-9 Hour.

Rotation for students needing a fourth rotation, usually in the Summer Semester.

GBS 795. Lab Rotation I. 1-6 Hour.

First rotation for first year GBS Theme students.

GBS 796. Lab Rotation 2. 1-5 Hour.

Second rotation for first year GBS Theme students.

GBS 797. Lab Rotation 3. 1-9 Hour.

Third lab rotation for first year GBS theme students.

GBS 798. Non-Dissertation Research. 1-12 Hour.

Lab hours for students in the GBS Theme who have not entered candidacy.

GBS 799. Dissertation Research. 1-12 Hour.

Lab hours for students in the GBS Theme who have entered candidacy.

Prerequisites: GAC D

GBSC-Grad Biomedical Sciences Courses

GBSC 700. Journal Clubs. 1 Hour.

Journal Clubs.

GBSC 701. Seminars. 1 Hour.

Seminars.

GBSC 702. Protein NMR Lab Course. 3 Hours.

The main purpose of this Course is to make students feel comfortable with the operation of the state-of-the-art NMR spectrometers. At the conclusion of the course, students should feel encouraged to incorporate NMR spectroscopy in their research programs on a regular basis (course is offered annually). This is a hands-on instruction to students about putting the sample in the magnet, tuning the probe, magnet shimming, deuterium lock, pulse calibration, setting up 1D/2D/3D-NMR experiments, and data processing using Topspin software. The students will utilize gramicidin-S and 15N/13C-calmodulin as a test samples. They are also encouraged to bring their own samples from their mentor's laboratories. We will utilize the 500 MHz and 600 MHz NMR spectrometers for this workshop, with two students at each spectrometer, taking turns in learning the operation. Course limited to 8 students maximum (i.e., four students in the morning sessions and four students in the afternoon sessions). Typically offered Spring semester.

GBSC 703. Bioinformatics Courses. 1-6 Hour.

Various Bioinformatics courses.

GBSC 704. Practical Course in Cryo-Electron Microscopy. 2 Hours.

This is a two-week practical course in high resolution electron microscopy (EM) with emphasis on cryo-EM and the preparation and observation of frozen-hydrated particulate samples such as protein complexes, viruses and whole bacterial cells. The first week will cover some theoretical aspects and general EM theory in morning lectures, followed by practicals and demos in the afternoon. The second week will consist of independent, hands-on practical work on the Tecnai F20 cryo-electron microscope. Students have the opportunity to work on their own samples. Open to all grad students but especially to those needing cryo-EM for research. Faculty, postdocs, and technicians may also attend, if space allows; class size is usually limited to 8. Course typically meets in May of Spring Semester.

GBSC 705. Protein Mass Spectrometry. 3 Hours.

Students participating in this course become familiar with standard analysis of proteins and protein mixtures by analytical mass spectrometry. This includes the analysis of recombinant and native isolations of proteins including the analysis of post translational modifications. The first month of the course will focus on the fundamentals of mass spectrometry and protein analysis and will be open to first year students. The second and third months of the course is followed by an applications section for students who have completed their first year course requirements. Included topics throughout the course include, sample preparation, mass spectrometry instrumentation, mass spectral interpretation, proteomic experimentation, database searching, analysis of protein modifications, targeted analysis of proteins in complex mixtures, and structural techniques in mass spectrometry. Typically offered Spring Semester.

GBSC 706. NMR Spectroscopy. 3 Hours.

The main purpose of this course is to provide fundamental understanding (physics) to graduate students who want to utilize NMR spectroscopy as a major tool in their structural biology research. Students with elementary Quantum Mechanics background will gain the optimum benefit from this course. The course is offered every two years. This course covers basic NMR Theory and Concepts (Nuclear Spin-1/2, Bloch Equations, FT-NMR, Rotating Frame, Various Relaxation Mechanisms, Chemical shifts, J couplings, etc.), Density Matrix Theory, Product Operator Description of 2D- and 3D-NMR, Nuclear Overhauser Effect, Conformational Exchange, Solomon-McConnell equations, Residual Dipolar Couplings, NMR spectra of Amino acids, Peptides and Proteins, Solvent Suppression Methods, Random Coil Chemical shifts, 2D-NMR methods for assignments and structure calculations of peptides and small proteins, 3D/4D-NMR methods for assignment and structure studies of large proteins, CYANA Structure-Refinement calculations, NMR of nucleic acids, Protein Dynamics, and study of Protein-Ligand complexes including applications in drug design (STD-NMR, trNOESY, SAR-by-NMR and ILOE). Typically offered Spring Semester.

GBSC 707. Metabolic Regulation of Gene Expression. 3 Hours.

This course will focus on the impact of various metabolites on gene expression, cell growth, and differentiation in health and disease. The key topics for discussion will include the types of biologically active molecules in mammalian tissues, the mechanisms that regulate their concentrations at different stages of life, and the mechanisms by which these bioactive molecules regulate gene transcription through binding to nuclear receptors/transcription factors. Primary literature applicable to these topics will be the basis for discussion. Each section on a specific type of signaling molecule will start with an introductory lecture, followed by student presentations focusing on various aspects of the topic. The goal of this course is to familiarize students with the mechanisms of action and diversity of bioactive metabolic compounds that directly affect the expression of proteins at the level of gene transcription as well as mRNA translation during development and in adulthood. Typically offered Spring Semester, March Module.

GBSC 708. Protein Purification & Characterization. 4 Hours.

Protein purification is the process of isolating a single type of protein or protein complex from mixture. It is critical for further characterization of protein function and structure. This course covers currently used approaches for protein purification and characterization. The format will integrate classroom lecture with demonstration. The goal of this course is to equip students with the fundamental knowledge needed to work with proteins.

GBSC 709. Advanced Stem Cell Biology & Regenerative Medicine. 4 Hours.

Patient-specific cell therapies promise to transform medicine in the next two decades. In order for these regenerative therapies to be safe and effective, basic mechanisms of stem cell biology must be better understood. The goal of this course is to provide students with the basic science foundation to contribute to this field and to provide examples of translating this information to next generation medical therapies. Course typically offered in Fall Semester.

GBSC 710. Advanced Chromatin Biology. 3 Hours.

Chromatin biology may hold the keys for discovery of novel cures for cancer and other chronic genetic diseases. Chromatin state directly influences the development of regenerative medicine. Over the last few years, there has been an explosion of new insights into chromatin biology. This course will focus on four key topics: chromatin structure and gene regulation, chromatin in cancer biology, chromatin in developmental biology, and practical approaches in chromatin research. The format will be 1/3 lecture and 2/3 student presentations. Primary literature related to these topics will be assigned for discussion. The goal of this course is to help students to understand the cutting edge knowledge in chromatin biology and to be able to address questions on chromatin in their own research. Course typically offered Fall Semester.

GBSC 711. Advanced Genetics Study. 1-9 Hour.

Independent Study in Advanced Genetics.

GBSC 712. Evolution of Immunity. 3 Hours.

Every form of multicellular life on earth has the capacity to carry out host defense. In higher order vertebrates the necessity for immunity against pathogens has given rise to an elaborate and complex system that involves a variety of specialized cell types and effector molecules. How did this complex system evolve? This course will explore immunity across the animal kingdom with a special emphasis on points of convergent and divergent evolution of immune mechanisms and strategies. Typically offered Fall Semester.

GBSC 713. Epigenetics Discussion. 2 Hours.

This course provides the student with an exposure to a wide range of basic epigenetics research topics and will promote scientific literacy, discussion skills, and critical thinking skills. In addition, students will gain experience developing lectures and providing constructive criticisms to their peers.

GBSC 714. Applications of Microscopy. 2 Hours.

This course will provide GBS students and postdoctoral fellows with an in-depth background in the theory of modern microscopy analyses for researchers in the biomedical sciences complemented with hands-on practical exercises. The course will cover a wide range of fundamental and cutting-edge approaches with training in experimental design and technical limitations, specimen preparation, diverse uses of bright-field, simple epifluorescence, single and multiphoton confocal, high resolution, live-cell, and intravital microscopy. The course will also provide training in specialized applications such as particle tracking and co-localization, photo-activation, Ca²⁺ imaging, FRET, FRAP, FLIM, and TIRF, and methods for quantitative data analyses. The course will also cover image preparation for publication and ethical issues related to image manipulation. Mentor & Course Master Permission is required to take this course. Contact course masters for more information. Course masters: Dr Kent Keyser and Dr Brad Yoder.

GBSC 715. Molecular Basis of Disease. 3 Hours.

This is an advanced, graduate course that explores the molecular and cellular mechanisms that underlie the causes, symptoms, and complications of various diseases, including diabetes, autoimmune diseases, atherosclerosis, and cancer. An integrative approach to the clinical, pathologic, biochemical, and molecular perspectives of diseases is introduced. This will help the students to understand how metabolic pathways, cell cycle regulation, signal transduction, transcription factors, and protein glycosylation impacts on our ability to understand and treat human disease. Requirement: This course is designed for graduate students admitted to campus-wide PhD programs in the biomedical and basic sciences, post-doctoral fellows, medical students, residents, staff, and members of the faculty interested in the latest advances and approaches in understanding and treating human disease. Student must have successfully completed a doctoral level biochemistry/molecular biology course. Typically offered: Spring Semester.

GC-Genetic Counseling Courses**GC 501. Genetics in Medicine. 3 Hours.**

Overview of the clinical evaluation and assessment of an individual with a congenital anomaly, mental retardation and/or genetic condition; includes introduction to etiology of common genetic conditions, pediatric genetic counseling, and testing and treatment options for genetic disorders.

GC 504. Prenatal Genetics, Embryology and Teratology. 3 Hours.

Basic concepts of embryology, teratology and physiology as related to human development and genetic disease and their applications in prenatal genetic counseling.

GC 505. Principles of Cancer and Adult Genetics and Counseling. 3 Hours.

Genetic mechanisms of cancer syndromes, cancer predisposition, and adult onset disorders; psychosocial issues related to these conditions that influence the genetic counseling process.

GC 506. Theory and Practice of Genetic Counseling. 3 Hours.

Development of advanced genetic counseling skills for application in clinical settings.

GC 510. Introduction to Genetic Counseling. 3 Hours.

Introduction to the field of genetic counseling and the basic principles of the profession.

GC 560. Genetic Counseling Journal Club. 1 Hour.

Review, presentation and discussion of relevant literature in medical genetics and genetic counseling.

GC 600. Advanced Clinical Skills in Genetic Counseling. 2 Hours.

Advanced genetic counseling clinical skills in areas such as communication, research, industry, and reflective practice.

GC 602. Advanced Topics in Genetic Counseling. 2 Hours.

Exploration of advanced topics in genetic counseling related to clinical practice and non-clinical professional duties as a genetic counselor.

GC 650. Clinical Laboratory Rotation. 2 Hours.

Exposure to genetic testing protocols, laboratory genetic counseling, and specimen processing and reporting through rotation in biochemical, molecular, and cytogenetic laboratories.

GC 651. Clinical Rotation I. 5 Hours.

Initial clinical rotation to establish basic skill sets in genetic counseling. Supervised and direct patient contact in prenatal, pediatric, adult, cancer, and specialty clinics will allow students to acquire cases for ABGC certification.

GC 652. Clinical Rotation II. 2 Hours.

Students utilize intermediate clinical skills in assigned clinical setting. Students interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 653. Clinical Rotation III. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 654. Clinical Rotation IV. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 655. Clinical Rotation V. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 698. Non thesis Research. 2 Hours.

Graduate level research project under the supervision of clinical faculty.

GC 725. Advanced Medical Genetics. 3 Hours.

Medical application of advances in genetics and genomics; chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics; current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics; genomic approaches to diagnosis and risk stratification.

GCLH-Global Comm Ldshp Honors Courses

GEO-Geography Courses

GER 590. Special Topics in Geography. 3-6 Hours.

Special topics in Geography. Course content will be determined by topic.

GER-Gerontology Courses

GER 540. Biology of Aging. 3 Hours.

GER 590. Seminar in Sociological Substantive Areas. 1-3 Hour.

GER 593. Educational Gerontology. 3 Hours.

GER 595. Independent Study in Longterm Care. 1-3 Hour.

GER 603. Politics of Aging. 3 Hours.

Analysis of the role of aging in the political process. Focus on political demands made by elderly, role of aging in political decision making, and policy outputs relevant to older population.

GER 610. Health and Economics of Aging. 3 Hours.

Overview of economic aspects of aging focusing on the role of health and health care in the United States. The financing of health care for the aged will be the primary topic of the course. The economic factors influencing formal and informal sources of long term care also will be addressed. A final topic will be the role of health in retirement decisions and pension policies.

GER 611. Managed Care. 3 Hours.

Examination of factors that influence future direction of managed care. Changing relationships among major stakeholders. Broad areas of discussion including marketing dynamics, product characteristics, reimbursement methodologies, contracting issues, management information systems, government initiatives, legal and ethical issues, and future trends. 3.000 Credit Hours.

GER 638. Gerontology and Geriatrics Multidisciplinary Core. 3 Hours.

The curriculum consists of lectures and discussions sessions on the multidisciplinary treatment of health and aging.

GER 643. Long-Term Care Administration. 3 Hours.

Seminar analysis of effect of chronic conditions and aging on delivery of health services, nursing homes and alternatives, mental health facilities and agencies, and rehabilitation facilities and services. Field trips and individual research projects. 3.000 Credit Hours.

GER 655. Minority Aging. 3 Hours.

GER 665. Geriatric Rehabilitation for the Health Profession. 3 Hours.

Rehabilitation of the elderly person from the perspective of age-related changes, the impact of selected functional problems, psychosocial aspects of decreasing function, personal and environmental adaptations, and the continuing autonomy of the individual.

GER 680. Health Promotion for the Aged. 2 Hours.

Problems and public health solutions for older Americans examined. Sub-areas of aging are explored; biological, social, behavioral, and economic aspects of aging.

GER 690. Independent Study in Gerontological Nursing. 1-3 Hour.

GER 691. Seminar in Gerontological Substantive Areas. 1-3 Hour.

Seminar in Gerontological Substantive Areas.

GER 734. International Medical Sociology. 3 Hours.

Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

GER 738. Gerontology and Geriatrics Multidisciplinary Core. 3 Hours.

Gerontology and geriatrics multidisciplinary core.

GER 755. Race and Ethnic Relations. 3 Hours.

Income inequality, school and residential segregation, intermarriage, and interracial crimes.

GER 759. Social Gerontology. 3 Hours.

Structural and behavioral implications of older adulthood. Relationships of aged to political, economic, educational, medical, religious, and other structures in society.

GER 760. Sociology of Death and Dying. 3 Hours.

Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying.

GER 769. Sociology of the Life Cycle. 3 Hours.

Theories of life; social construction of age categories, aging and family life, work, careers, and aging; men, women, and life cycle.

GER 777. Demography of Health and Aging. 3 Hours.

Focus on demographic processes, such as mortality, morbidity, migration, and fertility; how each influences number and proportion of elderly; how such processes shape age/sex structure; other demographic characteristics of older people.

GER 780. Medical Sociology. 3 Hours.

Theory and research in medical sociology; systematic overview of relevant literature.

GER 781. Sociology of Health. 3 Hours.

Subjective experience of illness; predictions of health behavior; social networks and health.

GER 785. Psychology of Aging. 3 Hours.

Age differences in perception, memory, intelligence, personality, adjustment, and psychopathology.

GER 786. Aging Seminar. 1 Hour.

Contemporary topics in aging, including basic science, clinical, and psycho-social issues.

GER 788. Social Medicine. 3 Hours.

Socioenvironmental factors in etiology of disease; social movements and health policy; medical ethics and broad ethical issues; place of social science in medical care.

GER 789. Social Medicine Seminar. 3 Hours.

GER 790. Independent Study in Gerontological Nursing. 1-3 Hour.

GER 791. Seminar in Gerontological Substantive Areas. 3 Hours.

Seminar in Gerontological Substantive Areas.

GER 796. Research Seminar in Health and Aging. 3 Hours.

GHS-Global Health Studies Courses

GHS 600. Fundamentals of Global Health. 3 Hours.

This course is one of three intergrated core courses in the UAB Certificate in Global Health designed to introduce students to the foundations of global health prgrams, policies and practices.

GHS 604. Infectious Diseases of Global Health Significance. 3 Hours.

The purpose of this course is to equip participants with up-to-date-knowledge on major infections of global importance, and prevention and control strategies so that infections and large disease outbreaks can be prevented and/or easily contained.

GHS 605. Disabilities and Global Health. 3 Hours.

This course explores current paradigms and models for defining and categorizing disability based on various international agreements and documents.

GHS 606. Critical Issues in Global Maternal and Child Health. 3 Hours.

This course is an elective module for students enrolled in UAB Certificate in Global Health program. Mothers and children in developing countries are among the most vulnerable and disadvantaged sectors of the world's population. This course defines the Maternal and Child Health (MCH) discipline, describes the current practices and challenges, and compares global strategies and potential solutions.

GHS 607. Global Health and Gender. 3 Hours.

Sex and gender are both important determinants of health. Biological sex and socially constructed gender interact to produce differential risks and vulnerability to ill health, differences in health seeking behavior, in health care providers' response and in health outcomes for women and men. Gender differences in morbidity and mortality represent `avoidable` and/or `unfair` inequalities in health. Because gender is socially constructed, gender-based inequities in health are amenable to policy and program interventions. This course is designed to help public health students, policy makers, health care providers and health researchers understand concepts related to gender and to apply them in an analysis of specific policies and programs. The course will enable participants to identify the gendered nature of issues like violence and sexuality and how these affect health. The course provides participants with support to apply a gender perspective to program planning, policy analysis, or a research design as part of their final assignment.

GHS 608. Food and Nutrition in Resource Limited Settings. 2 Hours.

This course will provide to graduate and professional students a general overview of the facts, research finding underlying nutrition and the relationships to acute and chronic diseases worldwide and their impact productivity and economic development.

GHS 609. Environmental Health in Resource Limited Settings. 3 Hours.

Demonstrate an understanding and appreciation of the complex roles played by the environment as a major determinant of health and identify the major environmental health issues confronting populations in a resource-limited setting.

GHS 610. Refugee Health Care. 3 Hours.

This course is one of the elective courses of the UAB Global Health Studies Certificate program, and is designed for professionals undertaking the GHS continuing education certificate as well as UAB graduate students enrolled in the GHS graduate certificate program. The course addresses the issues of refugees and the agencies concerned with their protection, human rights, and coordination and provision of care.

GHS 611. International NGO Management. 3 Hours.

The course addresses issues for managers of NGOs primarily at the field level of operation with special emphasis on project management. It begins with the history of international organizations and their roles in aid, development, and human rights. It follows with analysis of NGO organizational structure and function, roles, and the responsibilities of various stakeholders at the macro and micro level. Project development, planning, implementation, and evaluation will be addressed. Management principles and skills will also include budget preparation and staff/human resource management.

GHS 617. Global Health: Principles & Practice. 3 Hours.

This course introduces students to the world's vast diversity of determinants of good- and ill-health. It examines major global health policies, and stimulates students to analyze health problems, prevention, early detection, and treatment priorities in different nations. The course provides an opportunity to analyze the role of national and international development agencies and NGOs in global health policy and practice and to critically appraise health care delivery systems in different parts of the world. Current and emerging global health priorities are analyzed. New health challenges brought about by globalization, environmental changes, and economic development are discussed.

GHS 618. Global Health: Principles & Practices II. 3 Hours.

This course will explore in depth the causality of major diseases in underdeveloped and developing nations and the creation of health care systems and social policies to counteract them. This course will also focus on the interventions targeting the UN's Millennium Development Goals as they pass the halfway point to achieve them.

GHS 620. Infect Dis Surveillane & Contr. 3 Hours.

The primary focus of the course is vector ecology and biology, infectious disease surveillance and control, and water and sanitation in a developing country, with an emphasis on field and community-based learning. This class will take place in Jamaica and you must be accepted by the Sparkman Center for Global Health.

GHS 629. Intensive Global Health Training - SIFAT. 3 Hours.

Become a better Global Citizen by learning critical issues on Household Energy use in the developing world that affect health, environmental sustainability, gender equity, economics, and the development of millions of families and communities globally. Learn what you can do to make a difference. Be a part of the solution for a better world!

GHS 630. Field Training in World Hunger and Malnutrition: Practical Skills to Make a Difference. 3-6 Hours.

This two week intensive field training course will take place at SIFAT's 176-acre international training campus in Lineville, AL. Students will attend didactic sessions and participate in hands on activities and simulations. SIFAT trainers are experienced in international development and cross-cultural dynamics. On-site Field Training.

GHS 640. Social Responsibility in Global Health. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham.

GHS 641. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners.

GHS 642. Introprofessional Global Health Service Learning I: Project Planning. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the global health service learning program at the University of Alabama at Birmingham.

GHS 643. IGHSL2 Project Implementation. 3 Hours.

This course provides students with an opportunity to work in interdisciplinary teams of 3-8 members (minimum of 2 disciplines) and in collaboration with a community partner; the groups will apply principles of interprofessional collaboration, community partnership, and concepts and theories of global health in the implementation of a plan for a service project (developed in GHS 642) that addresses a specific global health problem identified by the community.

Prerequisites: GHS 642 [Min Grade: C]

GHS 649. Interprofessional Global Health Service Learning. 3 Hours.

This course provides students with an opportunity to work in small teams to address a global health problem in collaboration with a community partner. The global health problem to be addressed can be at a local site (with a local agency or partner), a site within the US, or an international site (with a US or non-domestic agency or partner). Interprofessional teams of 4-6 graduate and professional students will apply concepts and theories related to global health, interprofessional collaboration, team building, leadership, community partnerships, business models, and appropriate framework for developing and implementing a plan to address a specific global health problem with a community partner.

GL-Geology Courses**GN-German Courses****GN 580. Special Topics in German. 3 Hours.**

Topics to be announced. May be repeated for credit.

GN 590. Study Abroad. 1-6 Hour.

Approved program in a German-speaking country.

GN 599. Individual Studies. 3 Hours.

Directed Studies.

GRD-Graduate School Courses**GRD 600. Core Issues in Aging. 3 Hours.**

A multidisciplinary approach will be used to consider dimensions of the aging process. This course explores individual and societal meanings of aging and old age through the study of the biological, psychological and sociological changes accompanying aging as well as current issues and controversies in the study of aging.

GRD 601. Research Methods in Gerontology. 3 Hours.**GRD 602. The Health Care of Older Adults. 3 Hours.****GRD 603. Spirituality in Late Life. 3 Hours.**

This course will examine theories of aging as related to spiritual development in late life, research on spirituality and aging, practical methods for addressing spirituality in work with older persons and the community, and policy implications of including spirituality in aging services. A disciplinary approach will be utilized along with an emphasis on personal and professional development within the context of each student's primary discipline.

GRD 604. Health Literacy and Aging. 1 Hour.

This course will define the concepts of health literacy and the relationship of health literacy to competent provision of health care. Individual and institutional barriers to health literacy will be discussed in addition to methods to screen and improve health literacy of older adults. Notice - The Online version of this course requires students to come to campus for the first and last class meetings.

GRD 605. Cultural Competency and Aging. 1 Hour.

This course will provide an interdisciplinary overview of factors that may impact culturally competent care for older adults. The impact of language, literacy, and socioeconomic status (SES) will be discussed in the context of cultural competence. Barriers to providing culturally competent health care will be addressed.

GRD 606. Ethics and Aging. 1 Hour.

This course will provide an overview of ethical dimensions in later life. Issues related to ethical decision-making in the health professions will be addressed, including decision making protocols, team functioning, and issues related to end-of-life care. Social and institutional ethics involving older adults will also be discussed.

GRD 701. Presentation and Discussion Skills. 3 Hours.

Develops professional communication skills, including public speaking skills, conversation management, register shifting, and overall comprehensibility. Presentations taped and critiqued by self, peers, and instructor.

GRD 704. Specialized Instruction. 1-9 Hour.

This individualized course addresses particular communication needs of students actively writing theses, dissertations, articles for publication, grant proposals or pronunciation concerns of second language students. Individual plans approved by instructor are required.

GRD 705. Teaching at the College Level and Beyond. 3 Hours.

Introduces many of the basic principles needed to teach effectively at the college level and addresses current issues relevant to college teaching. Topics include creating a learning environment, course and syllabus design, effective lecturing, active learning approaches, evaluation and grading, and using technology to enhance learning.

GRD 706. Grants and Fellowships 101. 1 Hour.

Introduces the extramural funding process. Topics include types of awards, funding sources, components of an application, the review process, and writing effective grant proposals. One-day workshop.

GRD 707. Presenting Effectively. 1 Hour.

Provides an overview of giving effective oral presentation in academic and professional settings. Topics include analyzing audience and purpose, characteristics of an effective delivery, giving poster presentations, adjusting to lay audiences, and using technology in presentations. One-day workshop.

GRD 708. Writing Successfully. 1 Hour.

Addresses issues involved in writing academic and professional settings. Topics include analyzing audience and purpose, addressing common writing problems, developing effective writing practices, writing for publication, communicating research to general public, and grammar and punctuation for writers. One-day workshop.

GRD 709. Writing Fellowships. 3 Hours.

This course is a hands-on workshop for students who are writing pre- or post-doctoral fellowship applications. Provides hands-on assistance with preparation of a fellowship or grant application. Participants are introduced to ways to search for funding sources, then locate an appropriate source and complete the application.

GRD 710. Career Workshop for Graduate Students. 1 Hour.

This course introduces a variety of career choices for students working on advanced degrees in the life sciences. Topics may include sources of career information, self-assessment, resume construction, interviewing, using new technologies in job searches, career choices, the hidden job market, networking, and negotiating.

GRD 711. Special Topics. 1-3 Hour.

This course addresses topics of current interest related to professional communication, career development, and ethics.

GRD 712. Research Writing and Style. 3 Hours.

Teaches effective strategies of successful writers. Topics include the different types of writing that students and professionals do (such as abstracts, proposals, journal articles, progress reports, and correspondence), publishing, and ethical issues related to writing and publication.

GRD 714. Pronunciation and Intelligibility Training. 3 Hours.

This course provides opportunities for students to enhance intelligibility in academic settings.

GRD 715. Preparing TAs to Be Effective Teachers. 2-3 Hours.

Prepares teaching assistants to meet the educational needs of undergraduate students by developing effective teaching practices. Topics include preparing to teach, presenting material effectively, handling questions, handling difficult students and situations, leading laboratory sections, and ethical issues related to teaching.

GRD 716. Developing a Teaching Portfolio. 2 Hours.

This hybrid course guides students in developing a Teaching Portfolio for improving teaching practices and enhancing job search potential. The web-based curriculum introduces essential elements of the portfolio and guides students in drafting a personal Philosophy of Teaching.

GRD 717. Principles of Scientific Integrity. 3 Hours.

Surveys ethical issues and principles in the practice of science.

GRD 718. The Power of Ethical Thinking. 1 Hour.

This all-day workshop offers proactive strategies for avoiding pitfalls in authorship, co-authorship, and team leadership when disseminating and publishing research. The workshop is designed to raise research writers' awareness of critical ethical issues that can occur in the processes of deadline writing, shared authorship, peer review, copyright adherence, and faithful data/image representation. Students analyze published case studies for risky writing and publishing practices that lead to integrity breaches (including group, mosaic, and accidental plagiarism) and compromised scholarship. More importantly, they familiarize themselves with best ethical practices to apply to their own writing and publishing careers.

GRD 720. Navigating Academia. 3 Hours.

This course provides graduate students new to the U.S. academic environment with strategies for communicating effectively with instructors and advisors, classmates and colleagues, in the classroom or meetings, by telephone or e-mail.

GRD 721. Academic Interactions. 3 Hours.

This course prepares students to interact effectively and confidently in academic settings such as laboratories, seminars, journal clubs, and classes. Topics include strategies for handling speaking tasks of increasing complexity, challenging interactions, and high stakes situations.

GRD 724. Pronunciation and Intelligibility Workshop. 3 Hours.

This course guides students in refining spoken academic language skills.

GRD 725. Advanced Pronunciation and Intelligibility Workshop. 3 Hours.

This advanced course provides practice speaking in longer stretches of the speech without losing the clarity of the message. This course helps students prepare for thesis and dissertation defenses, lecturing, and talks given at professional conferences.

GRD 726. Introduction to Research Writing and Style. 3 Hours.

This course is designed for anyone new to research communications, including nontraditional, international, and 5th year master's students, and includes small-group instruction, writing practice, peer review, and self-editing practice.

GRD 727. Writing & Reviewing Research. 3 Hours.

Designed for graduate students and researchers working on course papers and scholarly writing projects, this course includes writing in field, peer review, revision, and self-editing.

GRD 728. Professional Writing & Publishing. 3 Hours.

Designed for graduate students and researchers seeking to write and publish professionally, this course includes writing in field, peer review, revision, and self-editing. Instructor approval required for second-language writers.

GRD 729. Writing Your Journal Article in 12 Weeks. 3 Hours.

Designed for graduate students and researchers who have a working manuscript to revise for publication, this course includes manuscript preparation and publication, planning with peer review, instructor coaching, revision, and self-editing. Not for individuals at initial writing stages.

GRD 730. Developing Your Professional Image. 3 Hours.

This course is designed to raise student awareness of their professional image. Topics include professional perception, polishing professional image, adjusting to professional contexts, and professional image and social media.

GRD 740. UAB Prep Scholar Workshop. 2 Hours.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 741. UAB PREP Scholar Workshop I. 1 Hour.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 742. UAB PREP Scholar Workshop II. 1 Hour.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 750. CIRTL Seminar in Teaching and Learning. 1 Hour.

This CIRTL seminar provides opportunities for students to read and discuss basics of effective teaching and learning.

GRD 751. CIRTL Seminar in Teaching and Learning II. 1 Hour.

This CIRTL seminar provides opportunities for students to read and discuss teaching as research projects.

GRD 752. CIRTL Seminar on STEM Teaching. 1-3 Hour.

This CIRTL Network seminar is designed for graduate students and postdoctoral scholars who plan to teach undergraduate STEM (science, technology, engineering, and mathematics) courses. It addresses a range of topics focused on enhancing STEM teaching.

GRD 753. CIRTL Seminar on STEM Academic Teaching Careers. 1 Hour.

This CIRTL Network seminar provides an overview of types of academic teaching positions and addresses topics related to academic careers.

GRD 754. CIRTL Effective STEM Teaching Approaches. 1-3 Hour.

This CIRTL Network course explores effective research-based teaching approaches for enhancing learning in STEM (science, technology, engineering, and math) courses. Approaches such as collaborative learning, team-based learning, flipped classrooms, inquiry science, case studies, and problem-based learning will be considered.

GRD 755. CIRTL Teaching Practicum. 3 Hours.

This CIRTL course provides students a structured observation and practicum experience in which they shadow a STEM faculty member as he/she teaches a semester-long course and engage in a variety of guided teaching activities.

GRD 756. CIRTL The College Classroom. 1-3 Hour.

This CIRTL Network course provides students with the basics of effective teaching with an emphasis on the learning-centered classroom and the interconnected cycle of teaching, assessment, and learning.

GRD 757. CIRTL Effective Use of Technology in Teaching and Learning. 1-3 Hour.

This CIRTL Network course provides students with strategies and technological choices and tools for effective use of instructional technology in their teaching practices.

GRD 758. CIRTL Diversity in the College Classroom. 1-3 Hour.

This CIRTL Network course addresses different aspects of diversity, particularly in STEM (science, technology, engineering, and math) education, with the underlying principle of equitable access and enhanced learning of all students. Topics include gender, race, culture, disability, first-generation college students, ethnically diverse students (men of color, Latino/as, and international students), and learning style/environment.

GRD 759. CIRTL Teaching-as-Research in STEM Courses. 1-3 Hour.

This CIRTL course introduces Teaching-as-Research project design and guides students through the TAR planning process.

GRD 760. CIRTL Teaching-as-Research Project. 3-6 Hours.

This CIRTL course is designed for students who are conducting a Teaching-as-Research project.

GRD 761. CIRTL Special Topics. 1-5 Hour.

This CIRTL course addresses topics of current interest related to college teaching.

GRD 762. CIRTL Individualized Seminar. 1-3 Hour.

This CIRTL seminar addresses teaching and learning projects related to STEM (science, technology, engineering, and math). Individual plans approved by the instructor are required.

GRD 763. CIRTL Individualized Teaching and Learning Project. 1-3 Hour.

This CIRTL individualized course provides students with opportunities to engage in teaching and learning projects related to undergraduate STEM (science, technology, engineering, and math) education. Individual plans approved by the instructor are required.

GRD 764. CIRTL Individualized Teaching Experience I. 1-5 Hour.

This CIRTL individualized course provides students with opportunities to teach and reflect on these experiences in a variety of teaching contexts. Individual plans approved by the instructor are required.

GRD 765. CIRTL Individualized Teaching Experience II. 1-5 Hour.

This CIRTL individualized course provides students with opportunities to teach for more extended periods and to reflect on these experiences in a variety of teaching contexts. Individual plans approved by the instructor are required.

GRD 790. Research/Lab Rotation. 1-10 Hour.

Graduate Lab Rotation Used by MD/PhD Students first summer semester.

Gen Professional Development Courses

General Elective Courses

HA-Health Administration Courses

HA 602. Introduction to Health Care Systems. 3-5 Hours.

U.S. health care system. Historical context; systems theory; analysis of organizational components; health services personnel; national, state, and local government roles; financing mechanisms; demography; mortality and morbidity; quality assurance; political issues; and trends in progress. Individual and group projects and field trips.

HA 605. Health Policy and Politics in the U.S.. 3 Hours.

Policy-making process in U.S. Review of forces influencing policy-making, legislative process, and evolution of U.S. health policy.

HA 606. Operations Management & Process Improvement in Health Care Organizations. 4 Hours.

Presents an overview of operational management and processes from the administrative perspective. Provides students with knowledge, skills, and tools including lean/six sigma, to implement, facilitate, and coordinate continuous quality improvement activities in health care environments.

HA 607. Decision Science for Health Services Administration. 3 Hours.

Day-to-day operational aspects of health services administration through use of required readings, case studies, class discussions, and class assignments.

Prerequisites: HA 602 [Min Grade: C]

HA 611. Managed Care. 3 Hours.

Examination of factors that influence future direction of managed care. Changing relationships among major stakeholders. Broad areas of discussion including market dynamics, product characteristics, reimbursement methodologies, contracting issues, management information systems, government initiatives, legal and ethical issues, and future trends.

HA 612. Essentials of Health and Human Disease. 3 Hours.

Reviews medical terminology, diseases, and diagnostic and therapeutic procedures for key body systems and the fundamentals of epidemiology.

HA 613. Health Law. 3 Hours.

Selected legal principles and their application to health field. Legal aspects of corporate liability, medical malpractice, admission and discharge processes, medical staff bylaws, informed consent, nursing, patients' rights, medical records, and governmental regulation of personnel and health facilities.

HA 614. Process Improvement. 3 Hours.

Customer driven process involving team and process thinking and application of statistical tools to way in which work is accomplished. Provides students with knowledge, skills, and tools necessary to implement, facilitate, and coordinate continuous quality improvement activities in health care environments.

HA 616. Biomedical Ethics. 3 Hours.

Focuses on the examination of various faith traditions, theories, principles and methods that influence reasoning, analysis and argument in contemporary health care ethics. Investigation of notable cases, the application of Modern Moral Theory, and in depth discourse on current issues in health care ethics (including media) is the cornerstone of the course.

HA 618. Seminar in Health Services Administration. 1 Hour.

This seminar provides an opportunity to reinforce the skills, knowledge, and abilities that will be required if students are to effectively transition into their administrative residency and professional health management practice. This will be accomplished by calling on faculty, health care managers, and other experts to provide brief, intensive seminars, workshops, field visits, and other related activities.

HA 620. Healthcare Financial Management I. 3 Hours.

Application of financial management techniques to decision making for health care providers. Financial management functions and organizations, financial statement analysis, working capital management, present value analysis, capital budgeting, cost of capital, variance analysis, financing techniques, and financial analysis case studies.

HA 621. Healthcare Financial Management II. 3 Hours.

Analytical and synthetic aspects of financial management tools. Project method and case studies used to supplement theory.

HA 622. Financial Management for Health Professionals. 3 Hours.

Financial statements, cost allocation, capital budgeting, time value analysis, reimbursement, financial risk and return, long-term debt financing, capital structure, cost of capital, and analysis of financial performance.

HA 623. Application of Health Care Finance Principles. 3 Hours.

This course gives students opportunities to work on finance related projects in a health care setting. It is intended for Master of Science in Health Administration students who are pursuing the Health Care Financial Management Certificate. The students will apply knowledge they have acquired in previous courses in Health Care Financial Management.

HA 624. Revenue Cycle Management. 3 Hours.

The purpose of this course is to expose generalist administrators to information directly related to a modern healthcare revenue cycle and the impact that this process has on the financial viability for all healthcare organizations.

HA 625. Strategic Planning and Management. 3 Hours.

Methods for strategic planning and management of health services organizations. Techniques for determining strategies for unique services, integration of strategy, structure, and administrative systems.

HA 628. Leadership Development. 3 Hours.

Provide tools for the students' professional development and leadership; assist students' research for an administrative residency.

HA 631. Organization Theory and Behavior. 3 Hours.

Introduction to organization theory and behavior with applications to health services organizations. Topics include organizational structure, organization/ environment relationships, organizational performance, power and leadership, perception, attitudes, motivation, communication, and group dynamics.

HA 632. Quantitative Methods in Health Services Admin. 3 Hours.

Selected mathematical, statistical, and computer applications and statistical techniques applied to decision making in hospitals and health care organizations.

HA 635. Human Resources Management in Health Services Administration. 3 Hours.

Human resources management issues, including strategic role of employee selection, appraisal, rewards, and development, applications to health care sector, labor relations, and unique aspects of labor law relevant to health care organizations.

HA 637. Leadership. 3 Hours.

Individual leadership talents in handling various organizational challenges, such as leading organization change, building strong culture, developing effective teams, resolving conflicts, implementing effective motivational systems, and nurturing a learning organization.

HA 638. Microcomputers in Health Services Administration. 1-3 Hours.

Application of one or more of major microcomputer software programs. Focus on programs not covered in other courses which are important to health care managers. Optional as independent study course devoted to particular program of interest.

HA 640. Information Systems and Management Science in Health Services Administration. 3 Hours.

Introductory course that provides basic vocabulary and principles of modern information architectures. Computer networking and communication technologies needed to support modern information infrastructures. Emphasis on management and use of information to support management decision making.

HA 641. Health Technology Assessment. 3 Hours.

Basic techniques of evaluation of health related drugs, devices, and procedures. Study of improving outcomes while constraining costs, making choices among alternative technologies and scientific methods of doing so. Issues of cost/benefit assessments and social, legal, and ethical problems raised in technology assessment.

HA 643. Long-Term Care Administration. 3 Hours.

Seminar analysis of effect of chronic conditions and aging on delivery of health services, nursing homes and alternatives, mental health facilities and agencies, and rehabilitation facilities and services. Field trips and individual research projects.

HA 644. Seminar Issues in Ambulatory Care and Medical Group Management. 3 Hours.

This course provides an overview to the field of ambulatory care and physician practice management. With the emphasis on outpatient care, these areas offer tremendous career potential for graduate students. Many aspects are similar between the acute care setting and the ambulatory care environment; however, this course will highlight areas that differ and how those differences impact doing business. This course builds on many of the Masters-level introductory courses.

HA 645. Health Economics. 3 Hours.

Economic analysis applied to health services sector; concept of efficiency applied to production and distribution of health services, health insurance, government programs, health care personnel, and health services organizations; current public policy issues; emphasis on student application of economic principles to health care issues.

HA 655. Seminar: Synthesis of Health Services Administration. 3-4 Hours.

Case method and problem-solving applications. Integration of materials presented during previous academic coursework. Course offered via Internet for Executive HA students. 2-3 hours each term of residency.

HA 661. Seminar: Social Issues in Health Services Administration. 3 Hours.

Social issues confronting and influencing health care delivery systems; maximum student participation in research and conduct of seminar; optional individual research project.

HA 671. Health Care Marketing. 3 Hours.

Introductory survey of marketing concepts as applied to health services organizations. Consumer behavior, market segmentation, target marketing, marketing research, management, and control of marketing mix variables.

HA 672. Health Care Entrepreneurship. 3 Hours.

This course provides a overview of the principle components of health care entrepreneurship, including business planning, raising funds, and the entrepreneurial activity and promoting innovation in existing healthcare organizations (intrapreneurial ventures).

HA 675. Health Administration Internship. 3 Hours.

Provides an experience for MSHA students to become more familiar with a health care organization or the deliver/administration of health care in a different country; provides an opportunity for students to apply and integrate knowledge and skills; interactions with health care managers and executives in a "real world" health care setting; enables students to explore and clarify their own career goals and to begin the process of professional development.

HA 680. Health Administration Capstone. 1 Hour.

Helps facilitate the students' transition from the academic learning environment to the "real world".

HA 690. Administrative Residency. 2-6 Hours.

Structured field experience providing mentoring relationship with preceptor, observation of management processes within health services organization, and application of administrative theory and techniques. 2-6 hours each term of residency.

HA 695. Independent Study. 1-6 Hour.**HA 697. Independent Study. 3 Hours.****HAC-Honors Academy Courses****HAI-Hlth Admin Intl Tack Courses****HAI 613. Health Care Law. 3 Hours.**

A study of health care law in the country where the course is being delivered. Topics will include the formation and termination of the treatment relationship, liability, malpractice, informed consent, vicarious liability, admission and discharge requirements, and other topics related to health care law.

HAI 621. Health Care Financial Mgmt II. 3 Hours.

This course will concentrate on the application of financial management principles and concepts for decision-making in health care organizations, and will integrate knowledge of health care finance to specific problems. Students are expected to have a basic understanding of financial management, managerial and financial accounting, and spreadsheet models.

HAI 650. Shaping Policy in International Healthcare Systems. 3 Hours.

Analyses of policy-making processes around the world, review of forces influencing policy-making, assessment of political decision processes, and evolution of health policy formulation.

HAI 655. Synthesis: Applied Concepts in Healthcare Management. 4 Hours.

Integration and application of concepts, principles, and theories of health services management to generate solutions to real health management problems.

Prerequisites: HA 631 [Min Grade: C] and HA 620 [Min Grade: C] and HA 614 [Min Grade: C]

HAI 671. Healthcare Marketing. 3 Hours.

Survey of marketing concepts and epidemiology, as applied to health services organizations in an international setting. Builds on concepts and ideas from organizational behavior, statistics, epidemiology, and financial management; provides background for strategic planning and management.

HB-Health Behavior Courses**HB 600. Social and Behavioral Science Core. 3 Hours.**

This course is structured to provide students with a basic "starting point" for developing the required competencies in this area. The course consists of information delivery (e.g., lectures, readings), practice and application exercises, and knowledge integration and synthesis activities. Successful completion of this course will enable you to describe the role of social and community factors in both the onset and solution of public health problems; identify the causes of social and behavioral factors that affect health of individuals and populations; identify basic theories, concepts and models; apply ethical principles to public health program planning, implementation and evaluation; specify multiple targets and levels of intervention; identify individual, organizational and community concerns, assets, resources and deficits; apply evidence-based approaches in the development and evaluation of interventions; describe the merits of social and behavioral science interventions and policies; describe steps and procedures for the planning, implementation and evaluation of public health programs; and identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions.

HB 602. Alcohol and Drug Abuse. 3 Hours.

History and theory of human substance use and abuse. Empirical foundations of alcohol and drug abuse, diagnosis, assessment, treatment, and prevention.

HB 603. Obesity Prevention & Intervention. 3 Hours.

This course is designed to introduce students into the multiple factors influencing overweight and obesity, provide insights into the complexities of obesity prevention and intervention approaches, and foster the skills needed to develop and evaluate a lifestyle based obesity intervention program. Students taking this class shall (1) acquire background knowledge relevant to understanding obesity as a complex, multilevel problem; (2) gain specialized knowledge in obesity intervention and prevention research in a topic of their choice (e.g., focus on a specific age group, intervention level, behavioral target); (3) choose and apply a theoretical model in developing an intervention in the chosen focus area, with an emphasis on the Social-Cognitive Model; (4) review the literature and conduct a needs assessment prior to developing an obesity intervention; (5) develop evaluation criteria and measures to test the effectiveness of the intervention; (6) demonstrate critical thinking and develop evaluation skills; (6) prepare and write an obesity intervention proposal; and (7) identify stakeholders, resources, and partnerships.

HB 604. High Technology Approaches to Health Communications and Behavior Change Interventions. 3 Hours.

To present students with an initial, in-depth exposure to concepts, technical skills and research findings associated with the integration of computer technology and health communications.

HB 605. Physical Activity in Public Health. 3 Hours.

The purpose of this course is to serve as an introduction to physical activity promotion research/practice from a public health perspective.

HB 606. Food Systems and Policies. 4 Hours.

This course will introduce students to elements of food systems and the implications of public policies around food.

HB 607. Nutrition of Mothers and Children. 3 Hours.

This course will cover concepts in MCH nutrition at three levels (biology, epidemiology and prevention/policies/practice) specific to 4 core topics over-nutrition/obesity; under-nutrition; infant and toddler nutrition; and pregnancy/fetal nutrition. Half of each class session will be devoted to interactive discussion.

HB 608. Womens Health and Social Behavior. 3 Hours.

This course examines social and behavioral factors that adversely affect women's health. Students learn to apply gender specific theories to design health interventions tailored towards women.

HB 609. African-American Health Issues. 3 Hours.

This is an intermediate level course that focuses on: epidemiological data illustrating the health risks experienced by African-Americans; sociocultural factors essential for understanding and enhancing the health of African-Americans; effective health-related prevention programs for African-Americans.

HB 610. Health Promo/Disease Prevent:Adv Theory/Practice. 3 Hours.

This course is a comprehensive overview of methods used to develop health promotion and disease prevention programs. It focuses on understanding, synthesizing, and applying behavior change theories to public health program development. The course includes the critical review of existing assessment measurements, the development of theory-based measures and evaluation principles in the context of intervention development and implementation.

Prerequisites: HB 600 [Min Grade: C]

HB 611. Mental Illness as a Public Health Issue. 3 Hours.

This course is designed to increase knowledge of mental illness at the individual, community, and population levels. It also covers historical and contemporary models and research on the etiology, diagnosis, assessment, treatment and prevention of mental and other behavioral health disorders.

HB 614. Cancer Control in the Community. 3 Hours.

Students will learn to apply basic health behavior and program planning theory and models to develop, plan, implement and assess culturally and socially appropriate interventions within a public school and/or community setting. Through service learning, students will have the opportunity to implement interventions in a community setting intended to promote healthy nutrition choices, institute exercise practices, lower tobacco usage and promote the use of skin protection.

Prerequisites: HB 624 [Min Grade: C] or HB 643 [Min Grade: C]

HB 624. Adv Theory Behav Sci. 3 Hours.

Advanced review of selected behavioral science concepts and theories useful for developing health promotion programs; social cognitive theory and the transtheoretical model of change are examined in depth. This course is required for MPH (Behavioral Science) students.

HB 625. Dissemination and Implementation in Health. 3 Hours.

The purpose of this course is to provide an introduction to the science of dissemination and implementation in health. Students will be able to identify major research, practice, factors and processes involved in dissemination and implementation.

HB 627. GIS for Public Health. 3 Hours.

This is an introductory course covering the theory and application of geographic information systems (GIS) for public health. Through this course, students will develop basic GIS skills, including GIS operations such as buffering, geocoding, layering, and spatial queries. Students will learn how to use those operations to both describe and propose solutions for public health challenges. The course will address introductory cartography and basic statistical aspects of spatial analysis. Learning will occur through lab exercises, case studies and homework exercises. The course will consist of one hour-long lecture/discussion and two hours of supervised lab/lecture each week.

HB 630. Health Communications: Theory and Practice. 3 Hours.

This course is designed to investigate the role of communication theories and methods in promoting public health and preventing disease. Both theoretical background in communication and behavioral science and practical communication/intervention development methods will be addressed.

Prerequisites: HB 624 [Min Grade: C]

HB 635. Communities, Families & Health. 3 Hours.

This course is designed for graduate students in public health and related fields interested in working with families and communities to improve health outcomes. To provide students with a broader understanding of the structural and psychosocial factors related to health and well-being. Focus will be on theoretical frameworks that draw on an ecological perspective and examine how factors associated with families, peers, schools, neighborhoods, and communities influence health.

HB 636. Developing Interventions to Promote Public Health. 3 Hours.

Prerequisites: HB 624 [Min Grade: C]

HB 638. Public Health Promotion and Aging Seminar. 3 Hours.

Exploration of current problems of the elderly, introduction to broad principles of health promotion for the elderly and review model health promotion programs. Course offered on-line.

HB 641. Research Methods in Behavioral Science. 3 Hours.

Review of research methodology in behavioral sciences. Formulation of research question, causality, experimental and quasi-experimental designs, reliability, and validity, reporting findings. Preq: Requires permission of instructor.

HB 643. Health Program Evaluation. 3 Hours.

Principles and procedures to evaluate health promotion/disease prevention programs; data collection methods, instrument-scale development, measurement, evaluation designs; analysis of case studies of disease prevention literature on evaluation.

Prerequisites: HB 641 [Min Grade: C]

HB 660. Adolescent Health: A Social and Behavioral Perspective. 3 Hours.

Designed to provide students with the most current knowledge and analysis of issues influencing the health and well-being of adolescents. Theoretical frameworks that draw on an ecological perspective will provide a better understanding of how families, peers, schools, and neighborhoods influence risk and protective factors in youth. Emphasis will be placed on the relevance of adolescent health issues for the science of Health Behavior and the broader public health arena.

HB 665. Family Violence/Child Victimization. 3 Hours.

Introduction: The purpose of this course is for students to gain a comprehensive knowledge of child maltreatment, family violence, child and youth victimization, and youth perpetration of violence. The course will focus on multi-disciplinary theoretical frameworks to explain family violence and subsequent effects on child/youth/young adult functioning including behavioral, social, and physical and mental health consequences.

Prerequisites: HB 624 [Min Grade: C]

HB 680. Health Promotion through Radio Outreach. 3 Hours.

Alternative methods for delivering health promotion messages to "hard-to-reach" audiences are being explored across the U.S. This course examines the strategy known as "entertainment education", specifically in terms of radio programming. Students who enroll will participate on the "BODYLOVE" script writers group as they learn to apply principals of behavior change in an "entertainment-education" format. "BODYLOVE" is a radio drama that is aired across the state of Alabama to education about risk factors for cardiovascular disease.

HB 692. Principles and Practices of Community Organization. 3 Hours.

Seminar designed as an integrative experience for persons working with community groups. The focus is on learning to use available resources and advocating change to maximize community involvement. NOTE: Requires permission of instructor.

HB 695. Seminar on Selected Health Behavior Topics. 1,3 Hour.

Seminar covering a variety of health behavior topics. Note: Requires permission of instructor.

HB 697. Internship. 3-9 Hours.

Field experience under joint direction of appropriate faculty member and qualified health education specialist. Written report specifying activities, products, and outcomes of experience submitted upon completion of internship.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

HB 698. Master's Level Directed Research Health Education. 1-9 Hour.

Independent study with guidance of appropriate faculty. Includes activities such as literature review and evaluation.

HB 699. Master's Level Project Research Health Education. 1-9 Hour.

Research for project under direction of research project committee.

HB 701. Theory-Based Measurement Development. 3 Hours.

The aim of this course is to introduce students to measurement development based on well-specified behavioral theories. This course will review and discuss key issues related to measurement development such as item/scale development, number of factors to retain, rotation options and statistical programs. NOTE: Requires knowledge of elementary probability and statistics for non-statistics majors.

Prerequisites: BST 611 [Min Grade: C]

HB 707. Nutrition of Mothers and Children. 4 Hours.

This course will cover concepts in MCH nutrition at three levels (biology, epidemiology and prevention/policies/practice) specific to 4 core topics over-nutrition/obesity; under-nutrition; infant and toddler nutrition; and pregnancy/fetal nutrition. Half of each class session will be devoted to interactive discussion.

HB 714. Survey Research Methods. 3 Hours.

This course will provide students with a theoretical and practical overview of survey research methodology. Topics to be covered include questionnaire and interview design; tailoring instruments for specific settings, populations and methods of administration; maximizing reliability of measurement; construction of scales and indices; sampling theory and methods, assessing sampling bias, and maximizing response rates. NOTE: Must have doctoral standing or permission of instructor.

HB 720. Neighborhood Influences on HB. 3 Hours.

To expose students to classical and current theories of neighborhoods and their affects on development and behavior in such a way that they will develop an appreciation for the importance of neighborhood context and it's impact on development and behavior and the ability to critically evaluate studies of neighborhoods and neighborhood context, and the conceptual tools to be able to incorporate neighborhood (and other) contextual effects into their own research.

HB 724. Advanced Social and Behavioral Science Theory. 3 Hours.

This course is for doctoral students in Public Health. This course is designed to provide doctoral students in public health with (1) a broad and comparative overview and in-depth understanding of major theories of health behavior, and (2) opportunities to integrate and apply theoretical knowledge in developing solutions to public health problems. Important aims of this course are to foster critical thinking and problem-solving skills in the application of theory to practice, and the ability to integrate theoretical solutions with evidence-based practice in the development of program adaptations and modifications.

HB 730. Health Communication Research. 3 Hours.

This course is designed to investigate the role of communication theories and methods in promoting public health and preventing disease. Both theoretical background in communication and behavioral science and practical communication/intervention development methods will be addressed.

Prerequisites: HB 750 [Min Grade: C]

HB 740. Advanced Health Program Evaluation Seminar. 3 Hours.

Advanced review of evaluation theories, approaches, and methods for assessing the plans, implementation, and effectiveness of health promotion programs. Preq: HB 643 or other master's level evaluation course and a graduate level multiple regression or multivariate statistics course.

Prerequisites: HB 643 [Min Grade: C]

HB 741. Clinical Research Methods in the Behavioral Sciences. 3 Hours.

his course provides an in- depth treatment of the major clinical trial research methods used in the behavioral sciences. Emphasis is given to the clinical trial as it forms the cornerstone of valid methods of scientific inquiry. The course will also examine methods of collecting, analyzing, and interpreting data. Other topics include evaluating published research, writing research proposals and reports, and ethical considerations.

HB 750. Advanced Theoretical and Scientific Basis of Health Education and Promotion. 3 Hours.

Provides doctoral students with in-depth examination of history and philosophy of health education; reviews professional competencies and outlines major theories of behavior change.

HB 760. Planning and Administration of Health Education and Promotion Programs. 3 Hours.

Examines administration of health education and promotion programs in schools, communities, and work sites; goals, advantages, and special concerns of working in each of these settings.

Prerequisites: HB 730 [Min Grade: C] and HB 750 [Min Grade: C]

HB 770. Doctoral Studies Seminar. 3 Hours.

The broad intent of the course is to review current issues relevant to the field of Health Promotion/Health Education, critically examine the relationship between scholarship, research, ethics and funding and reflect and discuss theoretical aspects of Health Promotion/Health Education.

Prerequisites: HB 750 [Min Grade: C] and HB 730 [Min Grade: C] and HB 760 [Min Grade: C]

HB 771. Seminar in Health Education/Health Promotion Session I. 1 Hour.**HB 772. Seminar in Health Education/Health Promotion Session II. 1 Hour.****HB 773. Seminar in Health Education/Health Promotion Session III. 1 Hour.**

This course is the third in a series of three 1-hour Doctoral Seminar classes, part of the core coursework in the UA/UAB joint doctoral program in Health Education and Promotion. This seminar is designed to meet the specific needs of graduate students by better preparing them for successful completion of their respective degrees as well as their future as health education professionals.

Prerequisites: HB 771 [Min Grade: C] and HB 772 [Min Grade: C]

HB 798. Doctoral-Level Directed Res. 1-9 Hour.

Independent study with guidance of senior public health faculty.

HB 799. Doctoral Dissertation Research. 1-9 Hour.

Research for dissertation under direction of dissertation committee.

NOTE: Must be admitted to candidacy before registering for this course.

Prerequisites: GAC D

HC-Honors College Courses**HCM-Health Care Management Courses****HCM 530. Health Care Delivery and Reimbursement. 3 Hours.**

Overview of U. S. health care system; current issues in health care policy; introduction to reimbursement methods for health care facilities and providers.

HCM 550. HC Lean Six Sigma Grn Belt Sem. 2 Hours.**HCO-Health Care Organization Courses****HCO 600. Introduction to Population Based Health Programs. 3 Hours.**

The purpose of this course is to provide the student with fundamental concepts and information concerning the provision of public health services, enhance the student's ability to discuss and analyze population based interventions appropriate for delivery through the public health system and instill in the student a willingness to think creatively about the organization and financing of public health services.

HCO 601. Health Economics. 3 Hours.

Economics as systematic way of thinking about use of resources. Tools of economics applied to issues of organization, delivery, financing, and outcome of health care. Develops economic principles and describes system of health care financing and delivery in the United States, providing basis for analyzing health management and policy options. With didactic coursework provided in HCO 601, doctoral students prepare a major paper under instructor's direction.

HCO 602. Narrative Public Health. 3 Hours.

The purpose of this course is to develop communication skills primarily through written exercises directly relevant to public health. Each exercise will explore and teach students different formats and techniques for communicating complex public health information to different audiences, such as colleagues, the lay public, public officials, or potential future public health students. NOTE: Only available to School of Public Health degree seeking students.

HCO 603. Public Health Policy. 3 Hours.

Theoretical framework and concepts used to understand evolution of public health policies and processes of policy formulation, implementation, and change. Significance of health policy for public health practical foundation of knowledge and skills useful in analyzing and responding to policy environment. Doctoral student will have an emphasis on independent analysis of health policy issues. Preq: HCO 601 or HCO 701 recommended.

HCO 604. Policy Politics in Public Health. 3 Hours.

The purpose of the course is to explore the many dimensions of public health policy within the political, cultural, scientific, and social context of American policy formulation and implementation. This course will explore traditional public health topics such as access to health care and environmental safety as well as current events in public health policy issues.

HCO 605. Fundamental of MCH Part 1: Issues, Program and Policies. 3 Hours.

This course will focus primarily on public health problems and solutions of MCH populations in the U.S. In addition to the introductory information on specific health issues related to children and families, the evolution, status, and future performance of selected federal, state and community programs will be analyzed. Course work also includes a review of factors that influence policy development and program implementation including: 1) research, 2) data issues, 3) current public policy reform movements, and 4) advocacy. The course will include lectures and discussions. Students will gain information on the history of MCH and public health, selected MCH issues for each stage of growth and development, the importance of family and communities in addressing MCH issues and federal and state-specific programs and policies that address the needs of MCH populations.

HCO 605Q. MCH Fundamental I: Issues, Programs and Policies. 3 Hours.

The purpose of this course is to provide students with knowledge about current major Maternal and Child Health (MCH) issues (health, social, economic, and environmental) and programs and policies designed to address these issues among women of reproductive age, infants, and children. This course is required of students seeking the Master of Public Health (MPH) degree in the Department of Health Care Organization and Policy's MCH Leadership and Policy Track. Other students interested in this area are encouraged to register.

HCO 606. Fundamentals of Maternal and Child Health Part II: Application of Essential MCH Skills. 3 Hours.

The purpose of this course is to introduce students to basic research methods used by public health practitioners, with a specific focus on their use in the MCH field and to introduce the needs assessment, program planning, and evaluation processes specifically related to public health and finally to provide practical educational experiences to develop skills in applying several research methods and the range of activities needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies.

Prerequisites: HCO 605

HCO 606Q. MCH Fundamentals II. 3 Hours.

This course is taught entirely in online format, with sessions occurring two times per week for 1 hour and 15 minutes per session. Course sessions will entail a combination of lectures, group discussions via course discussion board, small-group activities, and student presentations based on assigned readings and projects. Active student participation in all class discussions and presentations is essential. Guest presenters may be used to address specific topics.

HCO 607. Public Health Law. 3 Hours.

Survey of legal principles governing selected public health problems as derived from court decisions, statutes, and regulations. Topics include constitutional limitations on the public power, administrative law, government regulation of competition, and medical liability.

HCO 608. Reproductive Health. 3 Hours.

This course is intended to provide students with a foundation in reproductive health. It examines reproductive health issues, problems, policies, programs and services primarily in low-to-middle income countries.

HCO 611. Child Health and Development:Womb to Young to Adulthood. 3 Hours.

The premise of this course is that an understanding of principles of development is critical to developing, implementing, and evaluating effective programs and services for children and women of childbearing age. Through didactic, experiential, and interactive learning activities students will explore the processes that influence children's health and development and the supports and services that are needed to enhance those mechanisms. Issues for children and adolescents with special health care needs and well as typically developing children and youth will be included in lectures, discussions, and class projects.

HCO 612. Strategic Management in Health Programs. 3 Hours.

Provides a framework for strategic management in health care and public health organizations and provides opportunities to develop strategic plans for health care organization. Objectives are: to relate prior knowledge and experience to specific problem-solving situations; encourage strategic thinking in decision making in health care organizations; provide opportunities to engage in and manage a group decision-making process; gain experience in analyzing the public health environment and prepare a strategic plan for that environment; and develop implementation plans to accomplish strategic plans.

HCO 612Q. Strat Mang in Hlth Programs. 3 Hours.

The overall goal of the course is to provide a framework for strategic management and an opportunity to develop a strategic plan through a case study. In addition, the course provides participants an opportunity to integrate the knowledge and experience they have acquired in previous courses and health care organizational settings into a broad theory of management.

HCO 613. Health Information Techn Polic. 3 Hours.

The overall purpose of this course is to familiarize students with current issues associated with health information technology and their impact on the U.S. healthcare system.

HCO 615. Finance for Health Professionals. 3 Hours.

Financial management of public health care organizations. Emphasis on time value on money, capital raising methods, cost of capital, capital budgeting methods and working capital policy. Problem-solving orientation with applications to public health issues.

HCO 618. Management Concepts in Public Health Programs. 3 Hours.

Organization structure, management, finance and budgeting, human resources, contracts, negotiation, and operations research in public health settings. Presentation of general principles combined with study of actual cases from practice. Note: Permission of instructor.

HCO 619. Social Work in Public Health. 3 Hours.

Introduction and overview of the field of public health and the subspecialty of public health social work. Provides practical macro-level skills and explores the role and functions of social workers within major public health programs.

HCO 619Q. Social Work in Public Health. 3 Hours.

This course provides information about practical macro-level skills and increases the knowledge of students regarding the role and functions of advanced-trained social workers within major public health programs.

HCO 620. Health Ins/Managed Care. 3 Hours.

Insurance is a mechanism for dealing with the consequences of uncertain future states of the world. Health insurance and its consequences are significant reasons why health care markets differ from others. This course will present the underpinnings of health insurance, the classic problems of moral hazard and adverse selection, issues in the nature and effects of competition in the evolving managed care industry, employer sponsored health insurance, Medicare, Medicaid and current topics in health insurance and managed care.

Prerequisites: HCO 601 [Min Grade: C] or HA 645 [Min Grade: C] or AH 701 [Min Grade: C]

HCO 621. Clinic Decisions/Cost Analysis. 3 Hours.

The objectives of this course are to acquaint public health and other professionals with techniques of decision making under conditions of uncertainty and the basics of cost-effectiveness analysis. Topics include decision analysis, Markov processes, Monte Carlo simulation, valuing diagnostic tests, and measuring the costs and outcomes of health service programs. Students who successfully complete the course will be able to understand the strengths and limitations of these types of analysis and determine the relevance of research findings to their own areas of expertise. NOTE: If course work (BST 600 or BST 611 and BST 612) are not met, then permission of instructor is required.

Prerequisites: BST 611 and BST 612

HCO 622. Cost Effect Resear Mthds. 3 Hours.

The purpose of this course is to familiarize students with the design and implementation of cost-effectiveness and cost-benefit analysis.

Prerequisites: HCO 621

HCO 624. Healthy Lifestyles for MCH Populations: Intergrating Nutrition Physi Activity Comm-based Approach. 3 Hours.

COURSE DESCRIPTION: This proposed course will examine healthy lifestyles from the community viewpoint. Although nutrition is the primary focus of the course, it will also explore how nutrition and physical activity are integrated in programs and interventions for healthy lifestyles for the MCH population. There will be an emphasis on childhood obesity prevention and intervention. The course will integrate the Life Course model, illustrating the importance of early intervention as well as intervention at critical periods. This course will allow students to design an intervention and develop a policy paper to support MCR nutrition initiatives. Students will learn community-based strategies for promoting healthy lifestyles through improved eating and physical activity behaviors. The application of community-based planning based on "five cornerstones of a healthy lifestyle" (MCRB and ASTPHND,2008): access, collaboration, science and research, workforce, and communication will be included.

HCO 624Q. MCH Nutrition and Physical Activity. 3 Hours.

This proposed course will look at nutrition and physical activity from the community nutrition and physical activity viewpoint. It will explore nutrition and physical activity in the MCH population and students will become aware of the different public health venues where current interventions are occurring as well as where intervention can occur.

HCO 625. Adv. Leadership/Prac MCH Pt. I. 1 Hour.

The purpose of this course is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children and families. This course is required for MPH and DrPH students in the HCOP/Maternal and Child Health track and is open to students from other tracks and departments. It is offered as a 3, one-hour course sequence to allow sufficient time for students to develop the background and skills that build upon each other. Other faculty members and external guest presenters will be invited to address specific topics. The course will include lectures, small group discussions, exercises, individual projects and service-learning field-based activities. Student presentations are required.

HCO 626. Advanc Ldrshp Prac MCH II. 1 Hour.

This is the second of a three course sequence designed to equip students with knowledge and skills needed to provide leadership in the development and delivery of needed programs and policies to promote the health and well being of MCH populations.

Prerequisites: HCO 625

HCO 627. Adv Ldrshp Prac MCH III. 1 Hour.

The purpose of this course sequence is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children and families.

Prerequisites: HCO 625 and HCO 626

HCO 628. Qualitative and Mixed Methods Research in Public Health. 3 Hours.**HCO 629. Immigrant Health. 3 Hours.**

The purpose of this course is to provide an overview of key public health issues facing immigrant populations in the US, including the interrelationship between migration processes and health behaviors and outcomes, health and disease burdens for immigrant subgroups (e.g., Latinos, children), health care access and use, and health promotion/disease prevention.

HCO 631. Public Health Demography. 3 Hours.

This course will focus on principles of demography (the study of population) as related to public health. Course content covers: the measurement and analysis of fertility, mortality, population size, and composition; sources and evaluation of demographic data, techniques of population projection; and determinants and consequences of population trends and processes with applications for health and health care.

HCO 632. Readings in Maternal Child Health. 1-3 Hour.

Critical analysis of literature in single area of maternal and child health under supervision of faculty member.

HCO 640. Disaster and Emergency Management. 3 Hours.

The course will provide a concerted look into the realm of disaster and emergency management. Discussions in this course will concentrate on how disaster and emergency management has changed since 9/11 including new legislation and governmental structures. The course will culminate with a look at the roles and responsibilities of the public health system in preparing for and responding to both natural and man-initiated disasters. This course is intended for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 641. Health Preparedness and Response Policy. 3 Hours.

Preparedness policy can be defined as the sum of national and subnational governmental activities with the intent to protect the public's health and security. Discussions in this course will focus on policy and policy making in the U.S. and more particularly on preparedness policy and its evolution since 9/11. The purpose of this course will be to develop a skill set that will allow students to frame issues into social, cultural, regional and ethical norms, consider historical and political influence policy choices. Courses is for advanced MPH or doctoral students with an interest in preparedness policy, emergency, management, or public health preparedness.

HCO 642. Preparedness and Agriculture. 3 Hours.

This course presents the potential effects of an animal disease outbreak, whether natural, accidental or deliberate, on the affected communities. Topics covering the prevention and diagnosis of and the response to an animal disease outbreak will be presented. Examples of the interaction of public health with other disciplines will be provided. This course is designed for MPH students with an interest in preparedness policy, emergency management, or public health preparedness. NOTE: It is preferred that this course be completed during the final year of enrollment; however, any MPH candidate who has completed the entire core curriculum is eligible to enroll in the course.

HCO 643. Emergency Preparedness Exercise, Evaluation & Communication. 3 Hours.

This course will provide participants with an understanding of the psychological processes that occur during crises, how those processes impact human functioning, and how communication plays a critical role in the psychological outcomes of crisis situations.

HCO 644. Needs Assessment, Program Planning and Evaluation: The Public Health Planning Process. 3 Hours.

To introduce the needs assessment, program planning and evaluation processes specifically related to public health and to provide practical experiences to develop skills in the range of activities needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies.

HCO 670. Social and Ethical Issues in Public Health. 3 Hours.

This class examines situations where public health programs or policies create or become embroiled in social controversies. Topics examined include: the underlying social conflicts involved in these controversies, the nature of the types of groups involved, and the ethical dilemmas that face decision makers in these situations.

HCO 672. Perinatal Hlth Issues. 3 Hours.

The purpose of this course is to provide students with knowledge related to perinatal health issues and policies.

HCO 673. Applied Health Policy: Global Child Health Issues. 3 Hours.

The focus of the course will be on four current and complex policy issues (2 domestic; 2 international): refugee health; immunization activities and the link to autism; obesity in children and physical inactivity; and child labor. Pertinent background information related to international, federal, state and local policies and systems will be studied. Students should gain both technical capacity for analysis and an understanding of the health policy process. This course is intended for advanced MPH or doctoral students with an interest in health policy, international health, or maternal and child health.

HCO 675. Improving Health Care Quality and Outcomes. 3 Hours.

Examination of current issues in quality of care and outcomes management. The course includes a review of past and current efforts, tools, and theories of quality assessment, assurance, utilization management, and measuring and improving outcomes.

HCO 677. Patient-Based Outcomes Measurement. 3 Hours.

Detailed examination of patient-based outcomes measurement in the context of health care delivery systems and health care policy. Topics include: Theories and development of outcome evaluation instruments; disease-specific and generic measures of outcome; utility estimation; mediators and moderators of health outcomes; issues in instrument selection and administration; methods for evaluating outcomes data; and uses of outcomes data.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

HCO 680. Aging Policy. 3 Hours.

Providing for the physical and economic well-being of the aging population is a continual challenge facing society. The objectives of this course are to develop an understanding of the influence of demographic changes, economic factors, and public policy on the health status and health care of the aging population; investigate the work, retirement, savings, and health insurance decisions facing the elderly; describe the system of health care financing and delivery arrangements for the elderly in the United States and other developing countries. NOTE: Basic biostatistics or equivalent required.

HCO 686. Integrative Health Policy Analysis. 3 Hours.

The aim of this interdisciplinary course is to engage students in critical thinking about the goals, paradigms, effectiveness and implementation of health care policy in the United States. The course will incorporate several concepts from public policy analysis, public policymaking, health politics, public opinion research, media research, and technical-writing communication. NOTE: There are no prerequisite course requirements; however, students are expected to be familiar with the basics of the U.S. health care system and prior experience in health policy will be useful.

HCO 687. Empirical Methods for Health Research. 3 Hours.

The objectives of the course are to provide thorough treatment of simple and multivariate regression models, simple binary dependent variable models, instrumental variables estimators, sample selection and two-part models, and simple panel data models. Course provides students with an opportunity to acquire hands-on software. This course is designed for students who have had limited experience with regression analysis but a working knowledge of simple statistics, probability distributions, and basic calculus. Preq: Students should have had an upper level undergraduate or graduate course in statistics and probability; basic calculus.

HCO 690. Integrative Experience. 3 Hours.

This course has been designed "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice" through the analysis of actual cases from the annals of public health practice, participation in a strategic planning exercise, and the development of a new case from current and emerging areas of critical interest to public health. Students working in multi-disciplinary groups will demonstrate their ability to apply the general and specific public health knowledge they have acquired through their courses of study and effectively apply that knowledge across disciplines to the effective resolution of public health problems.

HCO 691. Policy Analysis: Modeling & Simulation. 3 Hours.

Training in basic skills necessary to design, test, implement, manage, present, and critique policy analysis in health care sector. Fundamentals of policy research design, and linkage between theory and operation. Various research techniques examined case studies and analyses of secondary data. Emphasis on choosing appropriate analytical strategies for particular policy issues. Data analysis using computers and critical evaluation of technical policy literature. Special topics in econometrics also addressed. Original policy analytic paper required at end of sequence. Preq: BST 600 or higher.

Prerequisites: BST 600 [Min Grade: C]

HCO 692. Adv Top Hlth Disparities Rsch. 3 Hours.

The primary aim of this course is to engage students in critical thinking about the current paradigms for health care disparities research in the US. As a part of this process, students will be challenged to think about the social, political, and economic determinants of health disparities for diverse health care consumers, to identify substantive trends and gaps in the health disparities literature, and to develop an innovative research or policy-oriented strategy for reducing health disparities. A secondary aim is to provide students with a broad overview of health and health care disparities according to race/ethnicity, gender, and health status. The three specific racial/ethnic groups are: African Americans, Hispanic/Latinos, and Asian/Pacific Islanders. The gender classifications include men and women. The health status groupings include persons with chronic health problems (such as diabetes or mental health condition, e.g. schizophrenia).

HCO 694. Special Problems in Policy Analysis. 3 Hours.

Continuation of HCO 693 - Policy Analysis: Modeling and Simulation.

Prerequisites: HCO 693 [Min Grade: C]

HCO 695. Seminar in Health Care Organization. 3 Hours.

Factors currently influencing finance and administration of public and private health programs; availability, accessibility, and utilization by selected population groups. NOTE: Completion of MPH core or permission of instructor.

HCO 696. Selected Topics in Public Health Finance. 3 Hours.

Financing of public health programs; sources of revenue (grants and contracts, tax revenues, and service fees), capital financing, and management of cash flows Techniques of maximizing revenues in public health programs.

Prerequisites: HCO 601 [Min Grade: C]

HCO 697. Internship. 3 Hours.

Field experience under joint direction of faculty member and qualified specialist working in selected aspects of public health. Written report specifying activities, products, and outcomes of experience required upon completing the internship.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

HCO 698. Master's Level Directed Research Health Care**Organization and Policy. 1-9 Hour.**

Independent study with guidance of appropriate faculty.

HCO 699. Master's Level Project Research Health Care Organization and Policy. 1-9 Hour.

Research for project under direction of appropriate faculty and/or research project committee.

HCO 701. Health Economics. 3 Hours.

Economics as systematic way of thinking about use of resources. Tools of economics applied to issues of organization, delivery, financing, and outcome of health care. Develops economic principles and describes systems of health care financing and delivery in the United States, providing basis for analyzing health management and policy options. With didactic coursework provided in HCO 601, doctoral students prepare a major paper under instructor's direction.

Prerequisites: BST 611 [Min Grade: C]

HCO 703. Public Health Policy - Doctoral Level. 3 Hours.

Theoretical framework and concepts used to understand evolution of public health policies and processes of policy formulation, implementation, and change. Significance of health policy for public health practical foundation of knowledge and skills useful in analyzing and responding to policy environment. Doctoral students will have an emphasis on independent analysis of health policy issues. Preq: HCO 601 or HCO 701 is recommended.

HCO 704. Advanced Public Health Economics. 3 Hours.

Advanced analysis of economic concepts important to public health problems; government financing of health services, public health delivery, utilization of health, and public health services; and perspectives and policy issues in public health.

Prerequisites: HCO 601 [Min Grade: C] or HCO 701 [Min Grade: C]

HCO 706. Strategic Mgmt Theory/Research. 3 Hours.

AH 706: Strategic Management Theory and Research is to provide a forum for the introduction of the concepts and issues of strategic management in order to facilitate their understanding and communications. The mission of the strategic management track is to develop highly qualified strategic management scholars and teachers who are contributing to the field. We accomplish this mission through:
 • Our strategic management courses,
 • Faculty/student interaction,
 • Publishing and presenting our work, and
 • Teaching others.

HCO 708. Reproductive Health. 3 Hours.

This course is intended to provide students with a foundation in reproductive health. It examines reproductive health issues, problems, policies, programs and services, primarily in low-to-middle income countries.

HCO 711. Child Health and Development: Womb to Young to Adulthood. 3 Hours.

The premise of this course is that an understanding of principles of development is critical to developing, implementing, and evaluating effective programs and services for children and women of childbearing age. Through didactic, experiential, and interactive learning activities students will explore the processes that influence children's health and development and the supports and services that are needed to enhance those mechanisms. Issues for children and adolescents with special health care needs and well as typically developing children and youth will be included in lectures, discussions, and class projects.

HCO 713. Health Information Techn Polic. 3 Hours.

Expands on content of introductory course in health policy. Insights into system's attributes; characteristics dictating its structure and function.

HCO 715. Finance for Health Professionals. 3 Hours.

Financial management of public health care organizations. Emphasis on time value on money, capital raising methods, cost of capital, capital budgeting methods and working capital policy. Problem-solving orientation with applications to public health issues.

HCO 718. Mgt Concepts in Pub Hlth Progs. 3 Hours.

Organization structure, management, finance and budgeting, human resources, contracts, negotiation, and operations research in public health settings. Presentation of general principles combined with study of actual cases from practice.

HCO 720. Health Insurance and Managed Care. 3 Hours.

Insurance is a mechanism for dealing with the consequences of uncertain future states of the world. Health insurance and its consequences are significant reasons why health care markets differ from others. This course will present the underpinnings of health insurance, the classic problems of moral hazard and adverse selection, issues in the nature and effects of competition in the evolving managed care industry, employer sponsored health insurance, Medicare, Medicaid and current topics in health insurance and managed care. Preq: HCO 601 or equivalent.

Prerequisites: HCO 601 [Min Grade: C] or HA 645 [Min Grade: C] or AH 701 [Min Grade: C]

HCO 721. Clinical Decision Making and Cost Effectiveness Analysis. 3 Hours.

The objectives of this course are to acquaint public health and other professionals with techniques of decision making under conditions of uncertainty and the basics of cost-effectiveness analysis. Topics include decision analysis, Markov processes, Monte Carlo simulation, valuing diagnostic tests, and measuring the costs and outcomes of health service programs. Students who successfully complete the course will be able to understand the strengths and limitations of these types of analysis and determine the relevance of research findings to their own areas of expertise. NOTE: If course work (BST 600 or BST 611 and BST 612) are not met, then permission of instructor is required.

Prerequisites: BST 600 [Min Grade: C] or BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

HCO 722. Cost-Effectiveness Research Methods. 3 Hours.

The objective of this course is to familiarize students with the design and implementation of cost-effectiveness and cost-benefit analysis. Specific topics include cost estimation, effectiveness measurement, time preference, uncertainty, ethical issues, valuing health outcomes, and ethical issues in cost-effectiveness research. At the end of the course students will develop and present analysis plans related to their particular fields of practice. Preq: HCO 721 or permission of instructor.

Prerequisites: HCO 721 [Min Grade: C]

HCO 723. Management of Complex Health Organizations. 3 Hours.

Complexity as related to management of health organizations. Academic health centers as models of complex organization. Incentive systems, organizational politics, and ownership and control within context of high complex health organizations.

HCO 728. Qualitative and Mixed Methods Research in Public Health. 3 Hours.**HCO 729. Immigrant Health. 3 Hours.**

The purpose of this course is to provide an overview of key public health issues facing immigrant populations in the US, including the interrelationship between migration processes and health behaviors and outcomes, health and disease burdens for immigrant subgroups (e.g., Latinos, children), health care access and use, and health promotion/disease prevention. This course is designed to be taken by doctoral students in either a DrPH program or a health related PhD program at UAB. Knowledge of quantitative or qualitative methods and experience with data analysis will be helpful for completion of the final research project.

HCO 740. Disaster and Emergency Management. 3 Hours.

The course will provide a concerted look into the realm of disaster and emergency management. Discussions in this course will concentrate on how disaster and emergency management has changed since 9/11 including new legislation and governmental structures. The course will culminate with a look at the roles and responsibilities of the public health system in preparing for and responding to both natural and man-initiated disasters. This course is intended for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 741. Health Preparedness and Response Policy. 3 Hours.

Preparedness policy can be defined as the sum of national and subnational governmental activities with the intent to protect the public's health and security. Discussion in this course will focus on policy and policy making in the U.S. and more particularly on preparedness policy and its evolution since 9/11. The purpose of this course will be to develop a skill set that will allow students to frame issues into social, cultural, regional, and ethical norms, consider historical and political influence on policy choices. Course is for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 742. Preparedness and Agriculture. 3 Hours.

This course presents the potential effects of an animal disease outbreak, whether natural, accidental or deliberate, on the affected communities. Topics covering the prevention and diagnosis of and the response to an animal disease outbreak will be presented. Examples of the interaction of public health with other disciplines will be provided. This course is designed for MPH students with an interest in preparedness policy, emergency management, or public health preparedness. NOTE: It is preferred that this course is completed during the final year of enrollment; however, any MPH candidate who has completed the entire core curriculum is eligible to enroll in the course.

HCO 743. Emergency Preparedness Exercise, Evaluation & Communication. 3 Hours.

This course will provide participants with an understanding of the psychological processes that occur during crises, how those processes impact human functioning, and how communication plays a critical role in the psychological outcomes of crisis situations.

HCO 772. Perinatal Health Issues. 3 Hours.

The purpose of this course is to provide students with knowledge related to perinatal health issues and policies.

HCO 773. Applied Health Policy: Global/Child Health Issues. 3 Hours.

The focus of the course will be on four current and complex policy issues (2 domestic; 2 international): refugee health; immunization activities and the link to autism; obesity in children and physical inactivity; and child labor. Pertinent background information related to international federal, state and local policies and systems will be studied. Students should gain both technical capacity for analysis and an understanding of the health policy process. This course is intended for advanced MPH or doctoral students with an interest in health policy, international health, or maternal and child health.

HCO 777. Patient-Based Outcomes Measures. 3 Hours.

This course will provide a detailed examination of patient based outcomes measurement in the context of health care delivery systems and health care policy.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

HCO 781. Research Methods and Study Design. 3 Hours.

This course examines empirical methods utilized in health policy and management research.

Prerequisites: HCO 787 [Min Grade: C]

HCO 782. Advanced Casual Inference. 3 Hours.

Casual inference involves the methods and thinking one uses to move from associations to cause-and-effect relationships. This course provides an intermediate treatment of econometric and biostatistical methods for the casual inference in public health.

HCO 786. Integrative Health Policy Analysis. 3 Hours.

The aim of this interdisciplinary course is to engage students in critical thinking about the goals, paradigms, effectiveness and implementation of health care policy in the United States. The course will incorporate several concepts from public policy analysis, public policymaking, health politics, public opinion research, media research, and technical-writing communication. NOTE: There are no prerequisite course requirements; however, students are expected to be familiar with the basics of the U.S. health care system and prior experience in health policy will be useful.

HCO 787. Empirical Methods for Health Research. 3 Hours.

The objectives of the course are to provide thorough treatment of simple and multivariate regression models, simple binary dependent variable models, instrumental variables estimators, sample selection and two-part models, and simple panel data models. Course provides students with an opportunity to acquire hands-on software. This course is designed for students who have had limited experience with regression analysis but a working knowledge of simple statistics, probability distributions, and basic calculus. Preq: Students must have upper level undergraduate or graduate coursework in statistics and probability; basic calculus.

HCO 788. Longitudinal Health Research. 3 Hours.

This course provides an intermediate treatment of econometric and biostatistical methods for longitudinal analyses of data in public health.

Prerequisites: HCO 787 [Min Grade: B]

HCO 791. Policy Analysis: Modeling & Simulation. 3 Hours.

Training in basic skills necessary to design, test, implement, manage, present, and critique policy analysis in health care sector. Fundamentals of policy research design, and linkage between theory and operation. Various research techniques examined case studies and analyses of secondary data. Emphasis on choosing appropriate analytical strategies for particular policy issues. Data analysis using computers and critical evaluation of technical policy literature. Special topics in econometrics also addressed. Original policy analytic paper required at end of sequence. Preq: BST 600 or higher.

Prerequisites: BST 600 [Min Grade: C]

HCO 792. Advanced Topic in Health Disparities Research. 3 Hours.

This primary aim of this course is to engage students in critical thinking about the current paradigms for health care disparities research in the U.S.

HCO 793. DrPH Practicum. 3-6 Hours.

Doctoral students are required to complete a 6 hour practicum working in a public health agency or organization.

HCO 795. Directed Readings. 1-5 Hour.

The purpose of this course is to assist students in preparing literature reviews, manuscripts, or to complete other activities as deemed appropriate by the faculty member. Final objectives will be based upon the work between the student and advisor.

HCO 796. Doctoral Seminar. 1 Hour.

Doctoral students will be introduced to advanced topics in public health policy and practice, health services research methods and management research. In addition, topics directly related to doctoral studies (article critiques, literature reviews, manuscript preparation, dissertation protocol development, etc.) will be discussed.

HCO 797. Directed Readings. 3-9 Hours.

The primary aims of this seminar are to engage students in critical thinking about current issues in management research, public health policy and public health practice and to expose students to state-of-the-art methodological issues in health services research.

HCO 798. Doctoral Level Directed Research Health Care Organization and Policy. 3 Hours.

The purpose of this course is for students to develop dissertation research protocols that will be presented to their dissertation committee for final approval. Final objectives will be based upon the work between the student and advisor.

HCO 799. Dissertation Research HCOP. 3-9 Hours.

Research for dissertation under direction of dissertation committee.

Prerequisites: GAC D

HE-Health Education Courses**HE 502. Mental Health and Stress Management. 3 Hours.**

Fundamental concepts of mental illness with emphasis on etiology, symptomology, treatment, and prevention of mental illness. Includes elementary skills, dynamics of stress, and contemporary methods of stress management.

HE 508. Drug Use and Abuse. 3 Hours.

Concept, manifestation, and causes of addiction. Major drug classifications and their effects. Potential of drug education as preventive mechanism.

HE 521. Health Communication. 3 Hours.

Skills appropriate for selected health problems; problem solving and referrals.

Prerequisites: HE 141 [Min Grade: C] or HPE 200 [Min Grade: C] or HE 222 [Min Grade: C] and HE 342 [Min Grade: C]

HE 523. Human Sexuality. 3 Hours.

Biological, sociological, psychological, and moral aspects of human sexuality. Includes biological overview, behavioral variations, research in sexuality, social issues, sexual decision making, sexuality of special.

HE 532. Administration of Health and Fitness Programs. 3 Hours.

Administrative theory and practice related to health and fitness programs in various components of programs, materials, and service personnel. Design instrument and methodology.

HE 598. Issues in Women s Health. 3 Hours.**HE 601. Current Readings in Health Education. 1-3 Hour.**

Review of literature in health education. Development of annotated bibliography pertinent to professional practice.

HE 606. Issues in Disease Control. 3 Hours.**HE 610. Foundations of Health Education. 3 Hours.**

Explores issues related to history, ethics, settings, agencies and organizations, literature, philosophy, theory, and roles and responsibilities relevant to health education and health promotion.

HE 621. Health Communication. 3 Hours.

Skills appropriate for selected health problems; problem solving and referrals.

Prerequisites: HE 610 [Min Grade: C]

HE 631. Planning and Implementing Health Education. 3 Hours.

Content and process planning and implementing programs in health education and health promotion. Sociological, psychological, and epidemiological foundations of health promotion programs. Development of practical skills for school, occupational, clinical, and community settings. A comprehensive program planning assessment will reinforce quantitative literacy in the profession. Quantitative Literacy is a significant component of this course (QEP).

Prerequisites: HE 610 [Min Grade: C]

HE 632. Admin Health/Fit Programs. 3 Hours.

Administrative theory and practice related to health and fitness programs in various components of programs, materials, and service personnel. Design instrument and methodology.

HE 640. Content Issues I. 3 Hours.

Drug, death, human sexuality, nutrition, international health, legislation, and physical and spiritual dimensions of health. Decision making and problem solving. Implication of research, computer applications.

HE 641. Content Issues II. 3 Hours.

Selected health issues. Personal characteristics of population (age, sex, emotional well-being) and external factors (societal and environmental); interventions and other approaches and solutions.

HE 642. Health Behavior and Health Education. 3 Hours.

Students will examine the determinants of successful client-professional interactions. This includes learning about the interaction between clients culture and health-related knowledge, attitudes, and behaviors. Students will critique consumer health information using multiple media. Case studies and web-based exercises assist students to consider health behaviors across settings and population groups.

Prerequisites: HE 610 [Min Grade: C]

HE 689. Methods and Materials for Planning Health Ed Prog. 3 Hours.

Ethical, theoretical, and practical aspects of health education; teaching techniques, decision-making skills, curricular development, organization skills, and techniques.

Prerequisites: HE 610 [Min Grade: C]

HE 690. Ethical Problems and Principles in Hlth Education. 3 Hours.**HE 691. Special Topics in Health Education. 3-6 Hours.****HE 692. Supervised Research in Health Education. 3-6 Hours.**

Prerequisites: EPR 608 [Min Grade: C] or EPR 609 [Min Grade: C]

HE 693. Advanced Field Experience in Health Education. 3-6 Hours.

HE 697. Evaluation of Health Education Programs. 3 Hours.

This course provides the graduate health education student with the competencies, knowledge and skills to plan and to implement an evaluation of health promotion-disease prevention for a defined population at risk.

Prerequisites: HE 610 [Min Grade: C]

HE 699. Thesis Research. 1-6 Hour.

Prerequisites: GAC M

HE 700. Health Education Seminar. 1 Hour.**HE 701. Special Topics in Health Education. 3-6 Hours.****HE 702. Supervised Research in Health Education. 3-6 Hours.**

Prerequisites: EPR 608 [Min Grade: C] or EPR 609 [Min Grade: C]

HE 705. Advanced Theoretical and Scientific Basis of Health. 3 Hours.

Advanced Theoretical and Scientific Basis of Health.

HE 710. Planning and Admin of Health Ed and Promotion Programs. 3 Hours.

Planning and Admin of Health Ed and Promotion Programs.

Prerequisites: HE 605 [Min Grade: C] or HB 750 [Min Grade: C] or HE 705 [Min Grade: C]

HE 720. Eval. of Health Educ./Health Promotion Programs. 3 Hours.

Evaluation of Health Education Programs.

HE 730. Advanced Theoretic/Scientif Basis of HP and HE. 3 Hours.**HE 731. Health Education Planning and Promotion. 3 Hours.****HE 732. Evaluation of Health Education Programs. 3 Hours.****HE 740. Evaluation Resh. Meth. in Hlth Educ/Hlth Prom.. 3 Hours.**

Evaluation of Health Education Programs.

Prerequisites: HE 720 [Min Grade: C]

HE 799. Dissertation Research. 1-12 Hour.

Prerequisites: GAC D

HI-Health Informatics Courses**HI 600. Analysis and Design of Health Information Systems. 4 Hours.**

Requirements, concepts, methods, and tools in analyzing, modeling, and designing health information systems with emphasis on clinical systems.

HI 601. Databases and Data Modeling. 4 Hours.

Concepts of data modeling, data architectures, and data administration. Study of various models with application to current health information projects. One hour required weekly in Health Informatics Computer Lab applying database skills.

HI 602. Clinical and Administrative Systems. 4 Hours.

Foundations of clinical information use starting with information collection, processing (e.g., decision making) and recording. All aspects of clinical information use in inpatient and outpatient facilities. Special emphasis on the clinician's work to support enterprise-wide health care delivery.

HI 605. Communications and Networks. 4 Hours.

Architecture of enterprise-wide voice, data, and video communication systems of healthcare organizations and its implications for information systems. Fundamental concepts of local and wide-area networks using various transmission media including copper, glass (optical), and wireless technologies. Transmission and switching components; network security and fault-tolerance; emerging high-speed data access to the Internet. One hour required weekly in Health Informatics Computer Lab applying communication/networking skills.

HI 610. Project Management For Health Services Professionals. 4 Hours.

Concepts and techniques in health care enterprises for information resources management through case study. Resource allocation, techniques for prioritization and control, project management, system installation, and operational fundamentals for information services.

HI 612. Organizational Behavior and Leadership. 4 Hours.

Systematic examination of human behavior in organizational settings with special application to health care organizations. Emphasis on study of individuals and small groups; personality, perception, attitudes, motivation, communication, and leadership. Case discussions and textbook readings.

HI 615. Administrative and Clinical Decision Support Systems. 4 Hours.

Examination of the role of information systems in supporting administrative and clinical decision-making in health care enterprises. Case studies of the design and use of computer-based decision support and modeling systems.

HI 616. Knowledge Discovery and Data Mining. 3 Hours.

Concepts and strategies for the design, development, and implementation of data warehouses and repositories to enable their exploitation by knowledge discovery and data mining technologies. Various models of data warehouse and repository design, and of the various methodologies associated with data mining and machine learning. Applications are made to the healthcare organization.

HI 620. Security and Privacy in Health Care. 4 Hours.

Security and privacy issues, legislation, regulations, and accreditation standards unique to health care domain. Technical security of networks, databases, audit mechanisms and control.

HI 630. Strategic Planning and Contracting for Health Information Systems. 4 Hours.

Theory, practice, and processes needed for strategic planning of integrated health information systems. Assessing benefits of enterprise-wide information integration and tactics needed to realize these benefits. Steps needed for developing strategic plans that are aligned with goals of health care institutions using case studies and in team projects. Development of a Request for Proposal (RFP) based on strategic plans. Critique and practice of skills needed to negotiate contracts with vendors.

HI 632. Quantitative Methods for Health Informatics. 3 Hours.

Selected mathematical, statistical, and computer applications and statistical techniques applied to decision making in hospitals and health care organizations.

HI 640. Intro to Health Informatics and Health Care Delivery. 3-4 Hours.

History and current status of information systems in health care and health care information systems. Information architectures, administrative and clinical applications, strategic planning, security, and benefits realization.

HI 645. Project Management. 3 Hours.

IT project management in a healthcare setting. Formal project management techniques, specific case studies, as well as, organizational dynamics. The course will cover the requirements necessary for formal certification.

HI 690. Administrative Internship. 4-8 Hours.

Structured field experiences in health care or other enterprises associated with health care industry. Includes a mentoring relationship with a preceptor and an opportunity for application of information resource management theory and strategies. Foundation for professional development and assists in refining skills and behaviors necessary for successful practice in a complex professional, social, political, and technological environment.

HI 694. Special Topics in Health Informatics. 3 Hours.

Study of selected topics in health informatics. May be repeated for credit.

HI 695. Independent Study in Health Informatics. 1-4 Hour.

Opportunity to investigate, perform activities and/or conduct a project related to a narrow topic in Health Informatics that corresponds with the current research of HI faculty, including medical informatics, nursing informatics, computer and communication sciences, library science, etc. May be repeated for credit.

HI 696. Health Informatics Seminar. 1 Hour.

Knowledge of key issues in informatics, health care and business is important to the professional development of the health informaticist. Gaining access to the wide variety of resources required to stay abreast of each of these areas is difficult without guidance. This seminar course is offered as a weekly noon discussion group and will cover important topics of interest to health informatics professionals. Each session will consist of a brief presentation followed by a discussion period.

HI 698. Master's Level Non-Thesis Research. 2-8 Hours.

Rigorous project that provides opportunity for focused investigation of informatics problem in real-world setting and for application of problems solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project. Conducted during Administrative Internship; may be repeated for credit (minimum of 8 credit hours required for graduation).

HI 699. Master's Level Thesis Research. 4-8 Hours.

Original research in health informatics and interpretation of results. Demonstrates student's acquaintance with literature of field and competency in proper selection and execution of research methodology. Recommended for students planning to pursue a doctoral degree. May be repeated for credit (8 hours maximum credit allowed).

Prerequisites: GAC M

HIM-Health Information Mgmt Courses**HIM 615. Development of the Electronic Health Record. 4 Hours.**

Computer based patient record theory; EHR implementation; migration of paper-based records and clinical applications to EHR; overview of clinical terminologies, vocabularies and classification systems for the EHR.

HIM 618. Legal and Regulatory Environment for the Electronic Health Record (EHR). 4 Hours.

Examination of legal issues related to electronic-based health information; computer and communication technologies, including privacy, security, electronic data interchange and compliance related issues; policy, regulatory and related concerns; interpretation and implementation of enterprise information policies.

HIM 650. Resrch Methods for HIM Pract. 4 Hours.

Study of design concepts and information systems to support clinical and health services research and investigation. Introduce major national research policy-making bodies, their research protocols and their management of information. Facilitate student development as members of a research team.

HIM 665. Health Data Analytics for Performance Improvement. 4 Hours.

HIM role in data analysis and use of comparative data from internal and external sources for improving performance measures in health care organizations; benchmarking performance measures; public reporting of data; methods used to improve quality scores.

HIM 680. Applied Project I. 3 Hours.

Application of research theories and concepts to health information management problem; includes topic selection, literature review, IRB approval, and design of data collection instrument.

HIM 681. Applied Project II. 3 Hours.

Application of research theories and concepts to health information management problem; includes data collection management, analysis, interpretation and display; preparation of final written report and oral presentation.

HIM 682. Seminar/Implementation Strategies for the Electronic Health Record. 2 Hours.

Using innovative teaching methods and techniques identify ways to educate and train health information management staff to use information (clinical, demographic, and financial) contained in the electronic medical record to promote data accuracy and integrity supporting quality and patient safety in the healthcare environment.

HMG-Hughes Med Grad Fellowship Courses**HMG 701. Hughes Med Grad Journal Club. 1 Hour.**

Weekly journal club seminar for faculty and students in the Hughes Med-Grad Fellowship Program. Students will present updates on thesis research and/or recent papers from peer reviewed journals. Faculty are encouraged to attend.

HMG 702. Phenotyping Human Disease. 2 Hours.

Introduction to the study of human disease and translational research. The course will consist of several 2-week modules, each covering a different disease. Each module will consist of two types of lectures. During the first week of each module, a physician scientist will discuss human patients and case studies of the disease. In the second week of each module, a basic science researcher will discuss the animal models used to study the same disease.

HMG 703. Quantitative Methods. 2 Hours.

The primary goal of this course is to teach statistical methods by describing clinical data that led to specific hypotheses and then discuss the different statistical tools needed to test these hypotheses. Each lecture will focus on how a particular statistical method was applied to the analysis of a particular disease. In addition, important historical manuscripts related to medical statistics will be used as examples of this integrated approach.

HMG 704. Modeling Human Disease. 2 Hours.

Introduction to the study of disease-based research. Format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease.

HMG 705. Vocabulary in Drug Discovery. 2 Hours.

This course will enable the student to follow the pipeline of drug discovery from target selection to FDA approval. Additional lectures will cover cancer drugs and targets, mechanisms of drug action, chemical synthesis, drug screening, lead development, metabolism, bioavailability, preclinical efficacy and toxicity assessment, and will emphasize issues of clinical trial design.

HMG 706. Hughes Med-Grad Journal Club. 1 Hour.

Journal Club for students in the Hughes Med-Grad Fellowship Program. Students will present updates on their thesis research and/or a recent paper from a journal. Faculty are encouraged to attend.

HMG 707. Vocabulary in Clinical Research. 1 Hour.

Students will be exposed to basic topics in clinical research and learn the details involved in designing clinical trials. Students will also sit in as ad-hoc members of the Scientific Advisory Committee of the UAB General Clinical Research Center and learn about the review process for human/clinical research trials.

HMG 714. Modeling Human Disease II. 2 Hours.

Introduction to the study of disease-based research. The format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease. This course is designed for 2nd year students that are expected to provide more of a leadership role (coordinate faculty/patient presentations).

HMG 724. Modeling Human Disease III. 2 Hours.

Introduction to the study of disease-based research. The format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease. This course is designed for 3rd year students that are expected to serve as group leaders and facilitate discussion.

HON-Honors Courses**HPE-Health Physical Educ Courses****HRP-Hlth Related Prof - Honors Courses****HRP 501. Honors Seminar I. 1 Hour.**

An overview of health care systems with current system-wide issues such as health care financing, reimbursement issues, security and privacy of health related information, and bioethics.

HRP 502. Honors Seminar II. 1 Hour.

A continuation of HRP 501 with an emphasis on health care leadership issues such as managing group dynamics, negotiating, conflict management, and decision making models.

HRP 510. Honors Project. 1-3 Hour.

Development and completion of a researchable project for presentation and publication under the direction of a faculty mentor. Two to four terms required for a minimum accumulation of 4 semester hours. Written research paper submitted and grades assigned upon completion of the 4 semester hours.

HUM-Humanities Courses**HY-History Courses****HY 601. Historiography. 3 Hours.**

Seminar on various theoretical perspectives and methodologies of professional historians. What historians do, how they do it, and why.

HY 602. Historical Research and Writing. 3 Hours.

Methods of historical research, including research in primary sources, and the distinctive characteristics of historical writing.

HY 612. Seminar in Early America. 3 Hours.

Topics and issues in the history and historiography of Colonial North America, circa 1500-1775.

HY 613. Seminar in the Civil War Period. 3 Hours.

Specialized themes and military, political, social, and economic developments related to the Civil War; particular emphasis on the South, 1860-1865.

HY 614. Seminar in Recent American History. 3 Hours.

Topics in the politics of modern America.

HY 615. Seminar in American Myths American Values. 3 Hours.

Recommended for students teaching at the secondary-education level and for traditional history students alike. Examines the major myths that inform, and that are informed by, traditional American values and how both shape social relationships.

HY 621. Seminar in Old South History. 3 Hours.

Subjects pertaining to the Old South era to Reconstruction.

HY 622. Seminar in New South History. 3 Hours.

Subjects pertaining to the New South era since Reconstruction.

HY 623. Seminar in Alabama History. 3 Hours.

Specific social, political, and economic aspects of Alabama History.

HY 631. Seminar: Topics in American History. 3 Hours.

Historical topics of American History, (e.g. Conservatism, Crime and Punishment).

HY 632. Seminar in U.S. Urban History. 3 Hours.

Topics in Urban History.

HY 633. Seminar in American Constitutional and Legal History. 3 Hours.

Study of major trends and cases in the history of American law, with special emphasis on the interpretation of the American Constitution by the Supreme Court.

HY 634. Seminar in African American History. 3 Hours.

Selected topics related to the African-American experience.

HY 635. Seminar in American Social History. 3 Hours.

A reading and research seminar examining the history of the structure and power of social groups in America.

HY 637. Seminar in U.S. Labor History. 3 Hours.

Development of labor force and movements in U.S. 19th and 20th centuries.

HY 638. Seminar in Civil Rights History. 3 Hours.

An analysis of history and historiography of Civil Rights Movement in America since the 19th century.

HY 639. Seminar in Women's History. 3 Hours.

An analysis of the changing economic, political, and social roles of women from colonial period to the present.

HY 641. Seminar in Latin American History. 3 Hours.

Issues in history of Latin America since the late 18th century; economic development, dependency and popular resistance, role of the Catholic Church, social revolution, and nationalism.

HY 650. Seminar: Topics in European History. 3 Hours.

Seminar in Historical topics in European History.

HY 651. Seminar in Medieval Europe. 3 Hours.

Examine political, economical, and religious interaction in the world prior to 1500.

HY 652. Seminar in the Renaissance. 3 Hours.

Special attention given to the new urban context of society, culture, politics, art, and religion.

HY 653. Seminar in Modern Europe. 3 Hours.

Reformation to the present; major topics such as society and politics, warfare, religious trends, state-building, and industrialization.

HY 654. Seminar in British History. 3 Hours.

Focuses on a particular period or problem in British history. Reading and discussion of current publications on the topic.

HY 655. Seminar in Russian/Soviet History. 3 Hours.

Analysis of primary sources and secondary works dealing with political and social history of Imperial Russia or Soviet Union and their successor states.

HY 656. Seminar in French History. 3 Hours.

Seminar dealing with various periods and issues in the history of France.

HY 671. Seminar in Asian History. 3 Hours.

Topics in Asian History.

HY 672. Seminar: Topics in World History. 3 Hours.

Seminar in historical topics of world history.

HY 673. Seminar in World Environmental History. 3 Hours.

Comparative examination of cultures and their relationship with the natural environment in a modern world context.

HY 674. Seminar in Comparative History. 3 Hours.

Explores through reading and research varied issues in comparative history; revolution, war, slavery, labor cities, industrialization, and social and cultural topics.

HY 675. Seminar-World Economic History. 3 Hours.

This seminar examines the diverse social, political and ecological contexts in which humans have provided for their material needs.

HY 681. Directed Readings in History. 3-6 Hours.

Individually designed course of readings in various fields. May be repeated. Only two directed reading courses will count toward degree requirements for history majors.

HY 682. Internship in Public Hist/SL. 1-3 Hour.

Individually designed program that places students in local historical museums and sites to gain professional experience in public history. Service Learning.

HY 683. Seminar in Public History. 3 Hours.

Explores the diverse approaches and methods of presenting history to public audiences, museums, historic sites, architectural preservation, documentary editing, and archival preservation.

HY 693. Seminar: Special Topics in History. 3 Hours.

Seminar exploring the historiography of a specialized topic in history.

HY 694. Seminar: Special Topics in Hy. 3 Hours.

Seminar exploring the historiography of a specialized topic in history.

HY 698. Non-Thesis Research. 3-6 Hours.

Individual research project.

HY 699. Thesis Research. 1-6 Hour.

Research culminating in master's thesis in history.

Prerequisites: GAC M

HY 771. Special Projects in History. 1-3 Hour.

Open only to those who hold the M.A. degree.

Healthcare Quality Safety Courses**HQS 600. Introduction to Clinical Quality Improvement. 4 Hours.**

Clinical quality improvement theory; classes of outcomes; process management; management tools and modeling techniques for improvement of clinical processes and decision-making.

HQS 610. Quantitative Methods, Measurement, and Tools for Quality Improvement. 4 Hours.

Statistical process control techniques applied to clinical and patient service processes, including Lean and Six Sigma methodologies; data system design concepts applied to clinical and financial data for managing health care business processes.

HQS 625. Fundamentals of Patient Safety. 4 Hours.

Nature and science of medical error; strategies for design of safety-critical systems; hazard analysis and risk assessment in health care organizations; design elements of safety programs and high reliability systems.

HQS 630. Leadership of High Reliability Healthcare Organizations. 3 Hours.

Applying concepts of high reliability organizations to create an organizational culture that supports strong, functional, and safe patient care environments resulting in quality clinical care and patient satisfaction.

IB-International Business Courses**IBS-Integrative Biomedical Sci Courses****IBS 700. Biological Chemistry and Cellular Physiology. 10 Hours.**

The purpose of this course is to provide students a rigorous background in the translational principles of biological chemistry and cellular physiology. The principles taught here are those that all students in the biomedical sciences should master. The students will then apply the knowledge acquired in IBS-I to organ-system physiology, pathophysiology, and pharmacology.

IBS 701. Pathophysiology and Pharmacology of Disease. 8 Hours.

The purpose of this course is to integrate physiological, pathophysiological and pharmacological principles of tissue and whole organobiology. Students will use an organ-system based approach to understand physiological processes in normal and diseased settings and the rational pharmacological approach in treating these disorders. The material mastered in IBS-II will facilitate understanding in genetic-based disorders and genetically-generated animal models of disease provided in IBS-III.

IBS 702. Genetics and Genetic Disease. 3 Hours.

The purpose of this course is to provide a molecular understanding of genetically-based human diseases and the role that animal models play in studying human disease. Students will be provided a basic background in genetics and a thorough analysis of the importance of altered gene products in diseases. Also covered is an analysis of the role of infectious agents in disease, emerging diseases, and new technologies in understanding the role of gene products in physiology, pathophysiology and therapy.

IBS 703. Biology of Neoplasia. 3 Hours.

Advanced graduate elective surveying cancer from molecular mechanisms to whole animals. Clinical Correlates also included. Coreq: IBS or CMB first-year courses or related courses.

IBS 706. Mitochondrial basis of Human Disease. 2 Hours.

Provides an interactive forum for faculty and students to discuss recent advancements in the field of mitochondrial biology with particular emphasis on the important role of mitochondrial dysfunction in human disease.

IBS 707. Cancer Biology. 2 Hours.

Provides a comprehensive coverage of molecular and cellular aspects of cancerogenesis as well as clinical issues related to human cancer.

IBS 708. Modern Drug Design and Development. 2 Hours.

This course takes a translational look at drug discovery from the fundamentals to detect the potential of anticancer compounds to the implementation of clinical studies.

IBS 709. New Perspective in Cardio Bio. 2 Hours.

Course will consist of didactic lectures given by faculty members from UAB and guest lectures from other institutions on a specific topic in the field of cardiovascular biology.

IBS 711. Principles of Toxicology. 2 Hours.

Introduces the interdisciplinary field to toxicology by laying the foundation for understanding how chemicals can have an adverse effect on living organisms and the mechanisms by which chemicals exert their toxic effects.

IBS 798. Non-Dissertation research. 1-4 Hour.

Non-dissertation research. Only open to first-year IBS students.

IEM-Information Egr Mgmt Courses**IEM 601. Introduction to IEM. 1 Hour.**

This course is an introduction to Information Engineering and Management with a focus on readiness for graduate study. Program requirements and expectations will be presented. Software and collaboration tools will be introduced. Library access and resources will be reviewed and teams will perform learning exercises to demonstrate proficiency with the available tools.

IEM 602. Leading Collaborative Teams. 1 Hour.

This course will focus on building, leading, and evaluating collaborative teams. Topics will include managing geographically-dispersed teams, team communication, accountability, running effective meetings, facilitation skills, building consensus, and handling common problems.

IEM 603. Communication for Technology Executives. 1 Hour.

This course will address communication issues unique to organizational executives. Topics will include functioning as the public face of the organization, working with the media, when to seek professional advice, and effective crisis management.

IEM 610. Communication for Technology Professionals. 3 Hours.

This course focuses on recognizing, developing, and putting into practice effective communication skills. Lectures provide insights into presentation structure, style, and content. Self-evaluation exercises combined with personal coaching will help clients improve their professional speaking and presentation skills.

IEM 611. Leading Technology Organizations. 3 Hours.

This course will use case studies, assigned readings, guest lecturers, research projects, and discussion of current issues in technology to develop executive-level behaviors and thought-processes as preparation for starting or leading a technology organization.

IEM 612. Project Leadership. 3 Hours.

This course teaches the fundamental concepts of leading projects. The course will consider all aspects of project leadership including the use of standard methodologies. Best practices will be reviewed along with practical insights based on real-world project leadership experience.

IEM 620. Technical Entrepreneurship. 3 Hours.

This course is an introduction to entrepreneurship that begins with the development of personal insights and work habits that are fundamental to success within any organization.

IEM 625. Technology and Innovation. 3 Hours.

This course examines technological innovation as an element of organizational strategy. Topics include the nature and management of innovation, aligning technical teams with overall organizational strategy, and the role of innovation in launching and sustaining technology ventures.

IEM 630. Systems Engineering. 3 Hours.

This course focuses on the systems engineering lifecycle and its application to the design of complex systems. Topics include systems thinking, managing complexity, problem definition, solution design, solution implementation, quality assurance, and measuring effectiveness.

IEM 631. Operational Decision-Making. 3 Hours.

This course focuses on the critical role of information and analytical methods in optimizing operational decisions. A core set of analytical tools will be presented and discussed. Topics will include decision analysis, optimization, modeling, simulation, and data analysis.

IEM 645. Financial Concepts for Entrepreneurs. 3 Hours.

This course introduces financial concepts including the interpretation of financial statements, managing cash flow, time value of money, capital budgeting, and investment analysis.

IEM 646. Strategic Planning. 3 Hours.

This course will examine the nature of strategic thinking and the challenges of achieving strategic alignment. Topics will include the strategic planning process and methods for assessing strategic success.

IEM 690. Special Topics in Area. 1-3 Hour.

Special Topics in (Area).

IEM 695. IEM Design Project. 3 Hours.

This course is focused upon a final design project that incorporates the technical and entrepreneurial coursework taken previously. Projects will be assessed based on their technical design and financial justification.

IH-International Health Courses**IH 600. Global Health: Principles and Practice. 3 Hours.****IH 601. Tropical and Infectious Diseases. 3 Hours.****IH 603. Reproductive Health in Developing Countries. 3 Hours.**

This course shall concentrate on those reproductive health concerns that fall within the childbearing years, are of major public health interest, and for which action and intervention are likely to bring about positive change. The course covers the key components of reproductive health including health pregnancy and safe motherhood, sexual health, fertility regulation, access to and the delivery of quality services, as well as methods for examining and improving reproductive health and care.

IH 608. Project Planning in International Health. 3 Hours.

This course is designed to equip students with skills in conceptualizing, developing, implementing, and evaluating small-scale projects in global health. Students will be guided through the process of identifying and investigating a global health problem, designing and implementing an intervention to solve the problem, and evaluating the impact of the intervention.

IH 609. Infectious Disease Surveillance and Control. 3 Hours.

Infectious Disease Surveillance and Control: Jamaican Field Studies.

IH 610. Environmental Hygiene in Developing Countries. 3 Hours.**IH 612. Nutrition in Developing Countries. 3 Hours.****IH 613. Nutrition Immunity and Infection. 3 Hours.****IH 615. Seminar Series in Global Health. 1 Hour.**

IH 618. Public Health Demography. 3 Hours.

This course teaches students how to use demographic data, methods, and perspectives to make sense of demographic developments and to solve practical problems, with an emphasis on public health. Students are introduced to the methods of demographic analysis, the principles of population dynamics, major demographic trends and patterns, their causes and consequences. In the process, students will develop competency in demography and an understanding of the health implications of major population issues in the contemporary world.

IH 621. HIV/AIDS and STDs. 3 Hours.**IH 650. Global Perspectives/Disease Prevention and Control. 6 Hours.**

Current Issues in Nutrition and Oral Health.

IH 651. Global Perspectives/Disease Prevention and Control. 6 Hours.

GLOBAL PERSPECTIVES/DISEASE PREVENTION and CONTROL.

IH 680. Gorgas Course in Tropical Medicine. 3-9 Hours.**IH 697. Internship. 3-9 Hours.**

Preceptorship.

IH 698. Master's Level Directed Research. 1-9 Hour.**IH 699. Master's Level Project Research. 1-9 Hour.****IH 701. Tropical Infectious Diseases. 3 Hours.**

Tropical and Infectious Diseases.

IH 703. Reproductive Health in Developing Countries. 3 Hours.

This course shall concentrate on those reproductive health concerns that fall within the childbearing years, are of major public health interest, and for which action and intervention are likely to bring about positive change. The course covers the key components of reproductive health including healthy pregnancy and safe motherhood, sexual health, fertility regulation, access to and the delivery of quality services, as well as methods for examining and improving reproductive health and care.

IH 710. Advanced Readings in International Health. 1-3 Hour.

Advanced Seminar in International Health.

IH 712. Nutrition in Developing Countries. 3 Hours.**IH 713. Nutrition Immunity and Infection. 3 Hours.****IH 798. Doctoral Level Directed Research. 1-9 Hour.****IH 799. Dissertation Research International Health. 1-9 Hour.**

Dissertation Research.

Prerequisites: GAC A

INAB-Study Away - Arabic Courses**INAH-Study Away - Art History Courses****INAH 500. Study Away Art History. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Art and Art History as satisfying degree requirements at the graduate level.

INAN-Study Away - Anthropology Courses**INAN 500. Study Away Anthropology. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Anthropology as satisfying Anthropology degree requirements at the graduate level.

INAR-Study Away - Art Studio Courses**INBY-Study Away - Biology Courses****INBY 500. Study Away Biology. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Biology as satisfying degree requirements at the graduate level.

INCH-Study Away - Chinese Courses**INCM-Study Away - Comm Studies Courses****INCM 500. Study Away Communication Studies. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Communication Studies as satisfying degree requirements at the graduate level.

INCY-Study Away - Chemistry Courses**INCY 500. Study Away Chemistry. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Chemistry as satisfying degree requirements at the graduate level.

INDC-Study Away - Digital Comm Courses**INEC-Study Away - Economics Courses****INED-Study Away - Education Courses****INEH-Study Away - English Courses****INEH 500. Study Away English. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of English as satisfying degree requirements at the graduate level.

INEV-Study Away - Env Studies Courses**INFN - Study Away - Finance Courses****INFR-Study Away - French Courses****INFR 500. Study Away French. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Foreign Languages & Literatures as satisfying degree requirements at the graduate level.

INGN-Study Away - German Courses**INGN 500. Study Away German. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Foreign Languages & Literatures as satisfying degree requirements at the graduate level.

INHY-Study Away - History Courses**INHY 500. Study Away History. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of History as satisfying degree requirements at the graduate level.

INIS-Study Away - Intl Stud Courses**INIT-Study Away - Italian Courses**

INJP-Study Away - Japanese Courses**INMC-Study Away - Mass Comm Courses****INME-Study Away - Mech Egr Courses****INME 500. Study Away Mechanical Eng. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Mechanical Engineering as satisfying degree requirements at the graduate level.

INMG-Study Away - Management Courses**INMG 500. Study Away Management. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Management as satisfying degree requirements at the graduate level.

INMK-Study Away - Marketing Courses**INMK 500. Study Away Marketing. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Marketing as satisfying degree requirements at the graduate level.

INMU-Study Away - Music Courses**INPC-Study Away - Physics Courses****INPE-Study Away - Phys Educ Courses****INPH-Study Away Philosophy Courses****INPS-Study Away - Polit Sci Courses****INPY-Study Away - Psychology Courses****INSC-Study Away- Sociology Courses****INSP-Study Away - Spanish Courses****INSP 500. Study Away Spanish. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the UAB Department of Foreign Languages and Literatures as satisfying degree requirements at the graduate level.

INTL-Study Abroad Courses**INTL 500. Special Topics in Study Away. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the appropriate UAB Academic Department as satisfying degree requirements at the graduate level.

INTR-Career Serv Internshp Exp Courses**IS-Information Systems Courses****IS 591. Intro Networking / Comp Prog. 3 Hours.**

Intended for candidates for the MS in Info Systems MG who do not have enterprise systems and programming experience or training, this course serves as an introduction for the non-programmer to an environment within which application developers develop software.

IS 592. Systems Analysis and Database. 3 Hours.

This course is designed to improve your understanding of how information technology, data storage and data retrieval are used to create information systems. Topics include systems theory, the Systems Development Lifecycle, collecting system requirements, data and systems modeling, and system security.

IS 599. Directed Readings. 1-3 Hour.

Readings and independent study in selected areas.

IS 611. Info Tech and Bus Strategy. 3 Hours.

This course is designed to improve your understanding of business strategy and the information technology that supports and shapes it. Information technology spans all business functions. We will study both the challenges and the opportunities that are the result of this pervasiveness.

IS 612. IT Governance and Management. 3 Hours.

This course introduces the concept of IT governance and will expose students to various IT governance frameworks. Particular focus will be given to the IT Governance Institutes COBIT framework, ITIL and ISO standards. Students will have an advanced understanding of the various IT governance frameworks, their application in an organizational setting and the managerial issues associated with different governance structures.

IS 613. Info Security Mgmt. 3 Hours.

Primary objectives of the course are for the student to develop an understanding of key information security concepts, develop an understanding of how people, technology, and organizational policies should be developed and managed to safeguard an organization's information resources, learn how to manage under uncertainty and risk, develop policies and procedures to make information systems secure, and learn how to audit and recover from security breaches.

IS 615. Soc Media/Virtual Communities. 3 Hours.

This course focuses on how social media and virtual communities are changing business in fundamental ways. The course helps students gain practical facility in the use of social media tools and learn meta-skills like how to use new social media tools, how to use filters to make sense of social media, and how to curate news and reports in a manner that contributes to business knowledge and intellect.

IS 616. Web Analytics. 3 Hours.

The Web Analytics course introduces technologies and tools used to realize the full potential of web sites. Focus is on collection and use of web data such as web traffic and visitor information to design web sites that will enable firms to acquire, convert, and retain customers.

IS 617. Intro to Business Intelligence. 3 Hours.

Covers topics of knowledge management and business intelligence from an organizational IT perspective. The content includes discussion of and readings on the nature of knowledge; knowledge discovery, generation, capture, transfer, sharing, and application; and includes discussion of the core IT capabilities necessary to deliver Business Intelligence in organizations. The development and use of data warehouses and data marts to support business analytics is discussed.

IS 618. Tech Based Project MG. 3 Hours.

The course provides the foundation for the management and successful execution of projects of many types applying PMBOK, or the PMI Project Management Body of Knowledge. The objective is to provide students with an understanding of how to manage technology-oriented projects. A combination of skill development in the general area of project management and application of those skills in evaluating case studies involving technology projects will be used.

IS 620. Attack and Penetration. 3 Hours.

Covers the concepts of network vulnerabilities from a hacker's perspective. Addresses the latest cutting edge attacks and common attacks still prevalent. Students will explore legal issues associated with computer network attacks. The course also provides students with the knowledge they need to design, build, and operate network systems to prevent, detect, and respond to attacks.

IS 621. Incident Resp./Bus. Continuity. 3 Hours.

This course provides students with the knowledge necessary to prepare for and respond to computer security incidents. Topics include incident response preparation, detection, reaction, recovery, and maintenance. Computer-related disaster recovery and business continuity planning are also addressed.

IS 622. CISSP I. 3 Hours.

The goal of the CISSP I course is to prepare the professional for the challenging security exam CISSP by covering the syllabus as defined in the Common Body of Knowledge (CBK). The CISSP I course covers the first 5 CISSP domain areas.

IS 623. CISSP II. 3 Hours.

The goal of the CISSP II course is to prepare professionals for the challenging security exam CISSP by covering the syllabus as defined in the Common Body of Knowledge (CBK). The CISSP II course covers the second 5 CISSP domain areas.

IS 630. Web Development. 3 Hours.

In this course, we will discuss concepts, principles, and methods related to the design and implementation of web applications. We will also build basic understanding and technical skills of both client and server technologies.

IS 631. Web Interface Design/Content. 3 Hours.

This course provides an introduction to the study of human-computer interaction, user interface design, and content creation. Course readings focus on developing both a strong theoretical understanding of the field and practical user interface design skills, and creating compelling content. Students will work on several design projects, including paper designs and implemented prototypes. Students will also participate as usability experts in evaluating the designs of others.

IS 632. Advanced Web Development. 3 Hours.

This course introduces students to more advanced skills in web design and gives students real-life experience in web development. As a major part of this course, students will work together as a team to build a complex website. In addition, students will review skills learned in the basic Web Design course.

IS 633. Mobile Applications. 3 Hours.

In this course, we will discuss concepts, principles, and methods related to the design and implementation of mobile applications. Emphasis is placed on developing web content and creating applications for mobile devices, including internet/business practices and techniques for delivery on mobile platforms.

IS 640. Tech Plans & Capital Budgeting. 3 Hours.

This course will cover financial techniques and metrics that IT managers should be familiar with, including topics such as measuring returns on IT investments, categories of IT investments, defining and quantifying expected benefits, managing the IT investment portfolio, and budgeting for IT expenditures.

IS 641. Leadership in IT. 3 Hours.

The Leadership in IT course will prepare students for leadership roles in IT related careers. The course will provide students with the knowledge, skills, and foundation in Leadership necessary to be effective in organizational settings, and develop an understanding of the components that make leadership successful.

ITL-Italian Courses**ITS-International Studies Courses****Intl Scholar Student Service Courses****JHS-Joint Health Sciences Courses****JHS 500. BioTeach. 6 Hours.**

For teachers of science courses. Hands on experience. McWane Center.

JPA-Japanese Courses**JS-Justice Sciences Courses****JS 501. Legal Research and Writing. 3 Hours.**

Foundation in the elements of legal research and writing, with an emphasis on developing and writing a legal brief.

JS 502. Introduction to Computer Forensics. 3 Hours.

Introduction to the use of analytical and investigative techniques in criminal or civil litigation to identify, collect, examine and preserve evidence/information magnetically stored or encoded.

JS 503. Restorative Justice. 3 Hours.

Introduction to, and analysis of, movement in criminal justice to institutionalize peaceful approaches to harm, problem-solving and violations of legal and human rights. Includes discussion of specific programs, critical evaluation of these programs, and analysis of future directions of the movement.

JS 504. Serial Killers. 3 Hours.

Examination of the psychology and sociology of serial killers; case studies and agency responses to these offenders.

JS 508. Juvenile Delinquency. 3 Hours.

Introduction to the nature, scope, and causes of illegal behavior by juveniles, and societal responses to that behavior.

JS 511. Juvenile Justice System. 3 Hours.

Introduction to the evolution and operation of specialized agencies and procedures to address juvenile law-breaking, including emerging problems and solutions.

JS 512. Juvenile Law. 3 Hours.

Review and analysis of emerging statutory and case law in American juvenile justice.

JS 513. The Legal Profession. 3 Hours.

Weekly seminars conducted by accomplished practitioners in civil litigation, criminal prosecution, criminal defense, labor and employment law, products liability, domestic relations, military justice, environmental, indigent legal aid, and alternative dispute resolution (ADR) techniques.

JS 515. Investigating Online Crimes. 3 Hours.

Introduction to cyber investigative techniques, involving focused analysis of email and websites; Examination of legal process and preparing evidence in cyber crime cases. (Also CS591).

Prerequisites: JS 502 [Min Grade: C]

JS 524. Serial Killers in Cross-National Settings. 3 Hours.

Examines serial homicide in cross-national settings including offender disorders; crime scene analysis; significance of victims; and offender classification process.

JS 530. Ethics and Computer Forensics. 3 Hours.

Overview of different systems of ethics; the role of ethics in computer forensics, cybercrime investigation, and information security; examination of ethical issues facing professionals involved in computer forensics, cybercrime investigation, and information security.

JS 537. CyberCrime and Forensics. 3 Hours.

Overview of all aspects of media forensics including analysis of character encoding, file formats, and digital media; examination of disk acquisition and duplication techniques and application of these techniques in criminal investigation scenarios.

JS 540. White Collar and Corporate Crime. 3 Hours.

Introduction to, and analysis of, illegal/deviant behavior occurring in organizational settings, including crimes committed by and against complex organizations.

JS 542. Race, Crime, Gender and Social Policy. 3 Hours.

Examination of how the subordinate status of minority groups (African Americans, Hispanics, Native Americans, and Women) affects interaction with the justice system as offenders, victims, and professionals.

JS 543. Women and the Criminal Justice System. 3 Hours.

Evaluation of the changing role of women in the justice system as victims, offenders and professionals.

JS 544. Law and Society. 3 Hours.

Examination of how law is used to facilitate or regard social change, social control, and social conflict in society.

JS 545. Juvenile Corrections. 3 Hours.

Examination of historical and contemporary efforts to reduce juvenile delinquency with particular attention to innovative programs and evaluation of their effectiveness.

JS 550. Questioned Death Investigation. 3 Hours.

Examination of forensic pathology as used in local medical examiners' offices.

JS 560. Violence: An American Tradition. 3 Hours.

The course examines violence as an American tradition. Although the class examines historical acts of violence as catalysts for social change, the emphasis will be on destructive or negative violence, -- criminal violence. The class examines many different acts of violence in society as well as policies and prevention strategies.

JS 565. Cold Case Analysis. 3 Hours.

Introduction to the methods used in analyzing unsolved cases, including innovative uses of technology, 3rd party investigators, and "teams.

JS 566. Spatial Analyses & Crime Mapping. 3 Hours.

This skills-based class will introduce students to the application of geographic information systems (GIS) to crime-related topics and issues.

JS 567. Forensic Toxicology. 3 Hours.

Discussion of drugs and poisons occurring in biological evidence, including the pharmacokinetic and pharmacodynamic properties of drugs and poisons, evidence collection and handling, selection of the most appropriate evidence, and analytical methods of detection.

JS 572. Molecular Genetics for Forensic Scientists. 3 Hours.

Prokaryotic and eukaryotic gene structure and function. Independent project required.

JS 583. Patterns in Crime. 3 Hours.

Examination of the major correlates of crime and criminality, including age, race, sex, and socio-economic status, examination of major sources of information from which data on crime correlates are gathered.

JS 593. Special Projects in Criminal Justice. 1-3 Hour.**JS 600. Pro-Seminar in Criminal Justice. 3 Hours.**

Critical analysis of formal and informal processing of offenders by criminal justice agencies, including police, courts, and corrections; effectiveness and future directions.

JS 601. Seminar in Criminological Theory. 3 Hours.

Classic and contemporary theoretical explanations of crime and criminality.

JS 603. Seminar in Criminal Justice Administration. 3 Hours.

Theories of organizational structure, motivation, and management applied to criminal justice agencies.

JS 604. Seminar in Criminal Justice Policy. 3 Hours.

Origins, formulation, implementation, and evaluation of criminal justice policy; classic and contemporary examples of policy innovations.

JS 605. Seminar in Research Design. 3 Hours.

Quantitative methods of empirical research emphasizing criminal justice/criminological applications; current research methodologies relating to analysis of issues involving crime and criminal justice.

JS 606. Seminar in Data Analysis. 3 Hours.

Bivariate and multivariate analyses and interpretation of results from substantive research.

JS 650. Advanced Questioned-Death Investigation. 3 Hours.

Examination of forensic pathology as used in local medical examiners' offices.

JS 653. Advanced Investigation of Fires and Explosions. 3 Hours.

Introduction to arson investigation including overview of specific techniques used in case investigation.

JS 670. Elements of Forensic Science. 3 Hours.

Introduction to philosophical considerations and historic landmarks in the discipline; overview of major sub-disciplines in forensic science; examination of the role of expert witnesses and their importance.

JS 671. Conventional Criminalistics. 3 Hours.

Exploration of basic methodologies and approaches for identifying, collecting, and analyzing trace and pattern evidence, including an overview of microscopy.

JS 672. Advanced Conventional Criminalistics. 3 Hours.

Examination of advanced methods for the analysis of trace and pattern evidence.

JS 673. Forensic Drug Analysis. 3 Hours.

Discussion of the isolation, identification, and quantification of commonly abused drugs and common poisons; interpretation of findings and correlation with legal applications.

JS 674. Biological Methods in Forensic Science. 3 Hours.

Examination of biological evidence in crime laboratory, including identification of bloodstains and semen stains, and DNA typing of blood, bloodstains, and other body fluids.

JS 675. Law Evidence and Procedure. 3 Hours.

Overview and examination of the legal aspects of physical evidence, including rules of evidence, procedural rules, and the role of expert witnesses.

JS 676. Advanced Biological Methods in Forensic Science. 3 Hours.

Discussion of current issues and trends in forensic DNA analysis, including advanced analysis of biological evidence samples.

JS 677. Advanced Forensic Toxicology. 3 Hours.

Discussion of relevant analyses conducted for drugs and poisons occurring in biological evidence; examination of the pharmacokinetic and pharmacodynamic properties of detected substances.

JS 679. Seminar in Forensic Science. 1-3 Hour.

Review, discussion, and presentation of forensic science research and literature; forensic science in the media and public opinion.

JS 680. Graduate Internship in Forensic Science. 3-6 Hours.

Field experience in a forensic science laboratory.

JS 686. Special topics in Criminal Justice. 3 Hours.**JS 687. Special Topics in Criminal Justice. 3 Hours.****JS 688. Special Topics in Criminal Justice. 3 Hours.****JS 693. Graduate Practitioner Internship in Criminal Justice. 1-6 Hour.**

Internship specifically arranged for practitioners internship credit for the criminal justice major.

JS 694. Graduate Distance Internship in Criminal Justice. 1-6 Hour.

Internship with agency that is occurring more than 100 miles from Birmingham.

JS 695. Graduate Independent Study (Non-Thesis). 1-6 Hour.

Independent study in a substantive area of interest under the direction of a faculty member.

JS 696. Graduate Internship in Criminal Justice. 1-6 Hour.

Field experience in criminal justice agency setting. May be repeated for a maximum of 6 hours credit.

JS 697. Graduate Plan II Research Project. 1-6 Hour.

Independent study in a student's substantive area of interest under the direction of a faculty member.

JS 698. Directed Research (Non-Thesis). 1-6 Hour.

Independent study in a student's substantive area of interest under the direction of a faculty member.

JS 699. Thesis Research. 1-6 Hour.

Admission to candidacy and successful defense of thesis proposal.

Prerequisites: GAC M

Joint Community College Courses

KIN - Kinesiology Courses

KIN 500. Organization & Admin of PE. 3 Hours.

This course is designed to provide the student with opportunities to increase his/her knowledge of problems and issues involved in the organization and administration of physical education programs in elementary and secondary schools.

Prerequisites: KIN 136 [Min Grade: C] or PE 136 [Min Grade: C]

KIN 509. Assessment in Physical Education. 3 Hours.

This course is designed to investigate the basic concepts of measurement and evaluation as applied to physical education. Through lecture and laboratory experiences students will acquire knowledge and skills related to the assessment and interpretation of student status, teacher effectiveness, and program effectiveness.

KIN 511. Elementary School Physical Education. 3 Hours.

Nature and content of a developmentally appropriate elementary physical education program.

Prerequisites: (KIN 136 [Min Grade: C] or PE 136 [Min Grade: C]) and (KIN 305 [Min Grade: C] or PE 305 [Min Grade: C])

KIN 520. Fitness and Motor Skill Acquisition. 3 Hours.

The purpose of this course is to provide students with the opportunity to acquire the knowledge and the skills necessary to analyze and appropriately teach motor skills and design developmentally appropriate fitness activities for adolescents.

Prerequisites: (KIN 136 [Min Grade: C] or PE 136 [Min Grade: C]) and (KIN 305 [Min Grade: C] or PE 305 [Min Grade: C])

KIN 520L. Sport Skill Proficiency. 1 Hour.

Acquire the knowledge and the skills necessary to teach the critical elements needed to perform all basic sport skills. Students will demonstrate skill proficiency in the sport skills as well as the ability to teach others to perform the skills.

Prerequisites: KIN 305 [Min Grade: C] or PE 305 [Min Grade: C]

KIN 585. Advanced Exercise Testing and Prescription. 3 Hours.

This course studies participant screening, risk stratification, and exercise assessment/testing and prescription to apparently healthy, special and diseased populations. Successful communication, programming and management principles for health/fitness settings will also be examined.

Prerequisites: (KIN 400 [Min Grade: C] or PE 400 [Min Grade: C]) or (KIN 637 [Min Grade: B] or PE 637 [Min Grade: B])

KIN 589. Physical Education Instructional Strategies. 3 Hours.

This course will focus on information to help potential physical educators attain teaching skills and knowledge necessary to design, implement and evaluate developmentally appropriate K-12 physical education programs. Students will gain hands-on experience with small groups of students in elementary, middle and high school settings.

KIN 601. Introduction to Sports Administration. 3 Hours.

This course will explore the field of sport administration. Students will learn about the many skills needed to be an effective administrator.

KIN 607. Principles of Coaching. 3 Hours.

This course will explore the principles of coaching regarding sport psychology, sport pedagogy, sport physiology, and sport management.

KIN 615. Sport Facility Planning. 3 Hours.

Principles of planning and managing sport facilities and events.

KIN 618. The Olympic Games. 3 Hours.

The Olympic Games will be investigated through a brief analysis of the history of the Ancient Olympic Games, an in-depth analysis of the Modern Olympic Games and the development of their global social, economic, political and cultural significance.

KIN 623. Philosophical Perspectives in Sport Administration. 3 Hours.

This course will address conceptual skills of an administrator beyond management skills, including addressing current trends and issues in education, physical education and athletics.

Prerequisites: EPR 692 [Min Grade: C]

KIN 630. Mechanical Analysis of Motor Skills. 3 Hours.

Analysis of motor skills in children, youth, and adults.

Prerequisites: KIN 307 [Min Grade: C] or PE 307 [Min Grade: C]

KIN 631. Foundations of Physical Education. 3 Hours.

Basic foundations of physical education in the school setting.

KIN 632. Supervision of Physical Education. 3 Hours.

Principles of supervising and maintaining a physical education program.

KIN 635. Principles of Management in Sports. 3 Hours.

This course is designed to give students an overview of the duties, responsibilities and problems facing athletic administrators in today's sports-conscious society.

KIN 636. Current Readings in Physical Education. 3 Hours.

This course is designed to assist the student in locating, analyzing, and synthesizing professional literature relative to current trends, issues and research in physical education.

KIN 637. Physiology of Exercise I. 3 Hours.

Basic content related to exercise physiology.

KIN 638. Physiology of Exercise II. 3 Hours.

Advanced content related to exercise physiology.

KIN 639. Exercise Prescription for High Risk Populations. 3 Hours.

Advanced Techniques in Exercise Testing.

Prerequisites: KIN 637 [Min Grade: C] or PE 637 [Min Grade: C]

KIN 640. Advanced Techniques in Conditioning the Athlete. 3 Hours.

Strategies for conditioning the athlete.

Prerequisites: KIN 400 [Min Grade: C] or PE 400 [Min Grade: C] or KIN 637 [Min Grade: C] or PE 637 [Min Grade: C]

KIN 642. Practicum in Physiology. 3 Hours.

Field-based experience in physiology.

Prerequisites: (KIN 637 [Min Grade: C] or PE 637 [Min Grade: C]) and (KIN 638 [Min Grade: C] or PE 638 [Min Grade: C])

KIN 643. Curriculum Development in Physical Education. 3 Hours.

This course focuses on the development of curricula in physical education grades K-12. Principles of curriculum development, existing curriculum models and current trends and contemporary issues related to curriculum development as discussed.

KIN 645. Advanced Motor Development. 3 Hours.

Motor development in children and youth.

KIN 647. Teaching Strategies and Issues in K-12 PE. 3 Hours.

This course is to update graduate students who are currently teaching physical education or seeking initial certification regarding new teaching strategies and methodologies as well as current state and national issues affecting K-12 physical education programs.

KIN 649. Adapted Physical Education. 3 Hours.

This course will prepare students for making wise and informed decisions about curriculum and placement options for students with disabilities in physical education settings.

Prerequisites: KIN 645 [Min Grade: C] or PE 645 [Min Grade: C]

KIN 650. Social Aspects of Sport. 3 Hours.

This course is a study of sport from a sociological perspective. Physical Educators, Coaches, and the sport novice alike will benefit from discussion that stimulates critical-thought concerning sport and how it relates to social life in modern culture. This course will help students view sport as more than just a reflection of the world in which they live. A global, issues-oriented approach to study the role of sports in society, sport-related controversies and the issues that cause them.

KIN 651. Issues and Problems in Coaching. 3 Hours.

This course is an introductory study of issues and problems, or dilemmas, that often arise in sport, physical activity and recreation programs and could potentially result in legal situations. Students in this course will benefit from discussion and case studies from the professional literature that can help them effectively manage sport-related programs and ultimately avoid legal problems. This course will approach issues and problems from a practical perspective as they relate to the legal duties of individuals who coach in youth, recreation, interscholastic, or intercollegiate settings. The course will include a study of current issues and problems in sport, physical activity and recreation through examination and critical analysis.

KIN 652. Measurement and Evaluation of Athletes. 3 Hours.

This course is primarily designed to help athletic coaches locate, select, and construct quality sport skill tests. Additional attention will be given to body composition, fitness, and psychological assessment of athletes. Students will review reasons why coaches should measure and evaluate athletes, and survey sound testing procedures.

KIN 653. Plan/Conduct Act Prog for Indiv with Disabilities. 3 Hours.

The purpose of this course is to provide students with knowledge and skills needed to meet the unique fitness and physical activity needs of individuals with various disabilities. Through class discussions and course assignments, students will learn to design and implement personal training/fitness programs and disability sports/recreation programs for individuals with disabilities based on assessments of health related strengths and needs.

KIN 655. Motor Learning. 3 Hours.

Principles of teaching and learning motor skills.

KIN 656. Advanced Sport Psychology. 3 Hours.

Psychological principles of sports.

KIN 663. Adventure-Based Counseling. 3 Hours.

Improvement of self-concept and social life skills through physical, spiritual, emotional, and mental development in creative activity outdoors. Natural environment used as a learning laboratory for leadership, teamwork, problem solving, decision-making, conflict resolution, and physical fitness.

KIN 664. Challenge Crse Fund II. 3 Hours.

This course continues introduces students to the background, philosophy, ethical issues, and risk management required to high ropes facilitation. Introduces students to a variety of high challenge course initiatives used for learning and problem solving, trust team building, and self-confidence and communication skills. How to present high challenge courses initiatives to diverse groups will be emphasized. Specific attention will be given to addressing learners of different ages and varying abilities. Additionally, an overview will be given of how counseling and ropes courses experiences can be integrated.

KIN 665. Adventure Processing and Facilitation. 3 Hours.

This course provides the skills necessary for facilitating a variety of client groups educational, recreational, corporate, and therapeutic indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, de-briefing, use of metaphors and transfer of learning. Activities are used to facilitate leadership, teamwork, problem solving, decision-making and conflict resolution. This knowledge will enhance students' ability to adapt their program to various groups. How to facilitate and lead group discussion with diverse groups will be emphasized.

KIN 666. Organization and Administration of Adventure Education. 3 Hours.

Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk management for the administrator, operations and file management, legal issues, accreditation standards, staff recruitment, hiring and training, marketing, fiscal management. Special attention will be given to managing an universally designed challenge course.

KIN 672. Advanced Treatment of Athletic Training. 3 Hours.

Advanced treatment of athletic injuries.

KIN 674. Advanced Sports Nutrition. 3 Hours.

Nutritional needs of athletes.

KIN 690. Seminar in Sports Administration. 3 Hours.

Overview of administration of sports programs.

KIN 693. Advanced Field Experience in Physical Education. 3-6 Hours.

Advanced Field Experience in Physical Education. Within your current teaching environment, demonstrate your teaching practice and attainment of the National Board for Professional Teaching Standards.

Prerequisites: EPR 609 [Min Grade: C] and EPR 692 [Min Grade: C] and (KIN 726 [Min Grade: C] or PE 726 [Min Grade: C])

KIN 694. Special Projects in Kinesiology. 1-6 Hour.

Special topics course in kinesiology.

KIN 695. Problems in Physical Education. 3-6 Hours.

Examination of current trends and problems in physical education.

KIN 696. Elementary/Secondary Physical Education Internship. 9 Hours.

This internship provides an opportunity for physical education students to participate in actual class for 15 weeks. Interns teach at two levels; elementary and either middle or high school. Student teaching is a culminating practical experience during which interns will likely be called upon to synthesize and apply all knowledge and skills acquired during previous coursework.

KIN 697. Advanced Field Experience in Kinesiology. 3-6 Hours.

Culminating field experience in kinesiology.

Prerequisites: KIN 547 [Min Grade: C] or PE 547 [Min Grade: C] or KIN 488 [Min Grade: C] or PE 488 [Min Grade: C]

KIN 698. Coaching Internship (Individual Sport). 3 Hours.

Culminating internship in coaching.

Prerequisites: KIN 607 [Min Grade: C] or PE 607 [Min Grade: C] or KIN 407 [Min Grade: C] or PE 407 [Min Grade: C]

KIN 699. Thesis Research. 1-6 Hour.

Kinesiology Thesis Research.

Prerequisites: GAC M

KIN 710. Special Topics in Physical Education. 3 Hours.

Special topics course in physical education.

KIN 715. Advanced Field Experience in Physical Education. 3-6 Hours.

Advanced field experience in Physical Education.

Prerequisites: KIN 647 [Min Grade: C] or PE 647 [Min Grade: C]

KIN 718. Practicum in Exercise Physiology. 3 Hours.

Practicum in Exercise Physiology.

KIN 720. Research Design and Methodology. 3 Hours.

Research and design methods in kinesiology.

Prerequisites: EPR 692 [Min Grade: C]

KIN 726. Supervised Research in Physical Education. 3-6 Hours.

Completion of research project in the field of physical education.

Prerequisites: EPR 609 [Min Grade: C] and EPR 692 [Min Grade: C]

KIN 728. EdS Thesis Research. 3-6 Hours.

Completion of indepth research in the field of kinesiology.

KIN 729. Physical Education Seminar. 3 Hours.

This course involves the development of thesis or research project presentation.

Prerequisites: EPR 609 [Min Grade: C] and EPR 692 [Min Grade: C]

LCB - FLC in Business Courses**LCED-FLC in Education Courses****LCH- FLC in Arts/ Humanities Courses****LCHP- FLC in Hlth Professions Courses****LCNU-FLC in Nursing Courses****LCPH - FLC in Public Health Courses****LCS-FLC in Social/Behavioral Courses****LCSL-FLC in Service Learning Courses****LING-Linguistics Courses**

LING 594. Special Problems in Linguistics. 1-3 Hour.

LING 595. Special Problems in Linguistics. 1-3 Hour.

LS-Legal Studies Courses

LS 557. Business Law for Accountants. 3 Hours.

The mechanics and application of the Uniform Commercial Code with emphasis on sales, commercial paper, and secured transactions; legal principles regarding trusts and estates, insurance, and business organization; and expanded treatment of the law of contracts. 999999.

LS 571. Legal Elements of Fraud Investigation. 3 Hours.

Key legal principles and courtroom procedures relevant to forensic accounting, and survey of related topics--criminology theories, evidence management, and litigation services.

LT-Foreign Literature English Courses**MA-Mathematics Courses**

MA 501. History of Mathematics I. 3 Hours.

Development of mathematical principles and ideas from a historical viewpoint, and their cultural, educational and social significance; earliest origins through Newton and Leibnitz.

Prerequisites: MA 125 [Min Grade: C]

MA 502. History of Mathematics II. 3 Hours.

Development of mathematical principles and ideas from a historical viewpoint, and their cultural, educational and social significance; Newton and Leibnitz through early 20th century.

Prerequisites: MA 501 [Min Grade: B] or MA 311 [Min Grade: B]

MA 511. Integrating Mathematical Ideas. 3 Hours.

This course will integrate ideas from algebra, geometry, probability, and statistics. Emphasis will be on using functions as mathematical models, becoming fluent with multiple representations of functions, and choosing the most appropriate representations for solving a specific problem. Students will be expected to communicate mathematics verbally and in writing through small group, whole group, and individual interactions.

MA 512. Connect Ma to SC and Tech. 3 Hours.

This course will extend the idea of functions as mathematical models introduced in MA 511 and extend the families of functions that are used as models. Specific models from the earth, life, and physical sciences will be introduced. The role of probability and statistics in model-building will be emphasized. Students will be expected to communicate mathematics verbally and in writing through small group, whole group, and individual interactions.

MA 513. Mathematics for Elementary and Middle School Teachers. 3 Hours.

Problem solving experiences, inductive and deductive reasoning, patterns and functions, some concepts and applications of geometry for elementary and middle school teachers. Topics include linear and quadratic relations and functions and some cubic and exponential functions. Number sense with the rational number system including fractions, decimals and percents will be developed in problem contexts. An emphasis will be on developing algebraic thinking and reasoning. Recommended that 2 years of high school algebra or MA102 has been completed before taking course.

MA 514. Mathematics for Elementary and Middle School Teachers. 3 Hours.

Problem solving experiences, inductive reasoning, concepts and applications of geometry and proportional reasoning for elementary and middle school teachers. Topics include analysis of one, two and three dimensional features of real objects, ratio and proportionality, similarity and congruence, linear, area, and volume measurement, and the development of mathematically convincing arguments. An emphasis will be on developing thinking and reasoning.

MA 515. Probabilistic & Stat Reasoning. 3 Hours.

Descriptive and inferential statistics, probability, estimation, hypothesis testing. Reasoning with probability and statistics is emphasized.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 516. Numerical Reasoning. 3 Hours.

Develop understanding of number and improve numerical reasoning skills specifically with regard to place value, number relationship that build fluency with basic facts, and computational proficiency; developing a deep understanding of numerous diverse computational algorithms; mathematical models to represent fractions, decimals and percents, equivalencies and operations with fractions, decimals and percents; number theory including order of operations, counting as a big idea, properties of number, primes and composites, perfect, abundant and significant numbers, and figurate numbers; inductive and deductive reasoning with number.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 517. Extending Algebraic Reasoning. 3 Hours.

Extending Algebraic Reasoning; Extending algebraic and functional reasoning to polynomials, rational, exponential, and logarithmic functions; problem-solving involving transfer among representations (equation, graph, table); proof via symbolic reasoning, contradiction, and algorithm; interpretation of key points on graphs (intercepts, slope, extrema); develop facility and efficiency in manipulating symbolic representations with understanding; appropriate use of technology and approximate versus exact solutions; functions as models. Prerequisite: MA 313.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 519. Special Topics for Teachers. 1-4 Hour.

With permission of instructor, may be used as continuation of any of MA 513 through 518. May be repeated for credit when topics vary.

Prerequisites: MA 125 [Min Grade: C]

MA 534. Algebra I: Linear. 3 Hours.

Abstract vector spaces, subspaces, dimension, bases, linear transformation, matrix algebra, matrix representations of linear transformations, determinants.

Prerequisites: MA 124 [Min Grade: C] or MA 126 [Min Grade: C]

MA 535. Algebra II: Modern. 3 Hours.

Groups, homomorphism, quotient groups, isomorphism theorems, rings and ideals, integral domain, fields. As time permits, Galois theory, semi-groups, models, or other areas of algebra may be included.

Prerequisites: MA 434 [Min Grade: C]

MA 540. Advanced Calculus I. 3 Hours.

Introduction to real numbers, sequences and series of real numbers; functions and continuity; differentiation. This course is taught as a do-it-yourself course and will meet for 4 hours per week.

MA 541. Advanced Calculus II. 3 Hours.

Integration; sequences and series of functions; uniform vs. pointwise convergence; some elementary and special functions. This course is taught as a do-it-yourself course and will meet 4 hours per week.

MA 544. Vector Analysis. 3 Hours.

Review and applications of multiple integrals, Jacobians and change of variables in multiple integrals; line and surface integrals; theorems of Green, Gauss, and Stokes with application to the physical sciences; computation in spherical and cylindrical coordinates.

Prerequisites: MA 227 [Min Grade: C] or EGR 265 [Min Grade: C]

MA 545. Complex Analysis. 3 Hours.

Analytic functions, complex integration and Cauchy's theorem, Taylor and Laurent series, calculus of residues and applications, conformal mappings.

Prerequisites: MA 227 [Min Grade: C] or EGR 265 [Min Grade: C]

MA 553. Transforms. 3 Hours.

Theory and applications of Laplace and Fourier transforms.

Prerequisites: MA 252 [Min Grade: C] or EGR 265 [Min Grade: C]

MA 554. Intermediate Differential Equations. 3 Hours.

Topics from among Frobenius series solutions, Sturm-Liouville systems, nonlinear equations, and stability theory.

Prerequisites: MA 252 [Min Grade: C]

MA 555. Partial Differential Equations I. 3 Hours.

Classification of second order partial differential equations; background on eigenfunction expansions and Fourier series; integrals and transforms; solution of the wave equation, reflection of waves; solution of the heat equation in bounded and unbounded media; Laplace equations, Dirichlet and Neumann problems.

Prerequisites: MA 252 [Min Grade: C]

MA 556. Partial Differential Equations II. 3 Hours.

Classification of second order partial differential equations; background on eigenfunction expansions and Fourier series; integrals and transforms; solutions of the wave equations, reflection of waves; solution of heat equation in bounded and unbounded media; Laplace's equations, Dirichlet and Neumann problems.

Prerequisites: MA 252 [Min Grade: C]

MA 560. Scientific Programming. 3 Hours.

This course is designed to provide the computational skills needed to attempt serious scientific computational tasks. Computers and floating point arithmetic; the UNIX operating system and an introduction to the compiled programming languages FORTRAN (including FORTRAN 90 and its revisions), and C and C++, in the context of solving systems of linear equations and systems of differential equations arising from practical situations; use of debuggers and other debugging techniques, and profiling; use of callable subroutine packages such as differential equation routines; MATLAB; Python; typesetting with TeX.

MA 561. Modeling with Partial Differential Equations. 3 Hours.

Practical examples of partial differential equations; derivation of partial differential equations from physical laws; introduction to MATLAB and its PDE Tool-box, and COMSOL using practical examples; an overview of finite difference and finite element solution methods; specialized modeling projects in topics such as groundwater modeling, scattering of waves, medical and industrial imaging, continuum mechanics and deformation of solids, Fluid mechanics including the class boat race, financial derivative modeling, and acoustic and electromagnetic wave applications. Written project reports required for all homework assignments. Quantitative Literacy and Writing are significant components of this course (QEP). Pre-requisite: MA227 [Min Grade C], or permission of instructor.

Prerequisites: MA 227 [Min Grade: C]

MA 562. Intro to Stochastic Differential Equations. 3 Hours.

Stochastic differential equations arise when random effects are introduced into the modeling of physical systems. Topics include Brownian motion and Wiener processes, stochastic integrals and the Ito calculus, stochastic differential equations, and applications to financial modeling, including option pricing.

Prerequisites: MA 485 [Min Grade: C] or MA 585 [Min Grade: C]

MA 563. Operations Research I. 3 Hours.

Mathematical techniques and models with application in industry, government, and defense. Topics usually chosen from dynamic linear, and nonlinear programming; decision theory; Markov chains; queuing theory; inventory control; simulation; network analysis; selected case studies.

Prerequisites: MA 126 [Min Grade: C]

MA 564. Operations Research II. 3 Hours.

Mathematical techniques and models with application in industry, government, and defense. Topics usually chosen from dynamic linear, and nonlinear programming; decision theory; Markov chains; queuing theory; inventory control; simulation; network analysis; selected case studies.

Prerequisites: MA 126 [Min Grade: C]

MA 565. Partial Differential Equations: Finite Diff. Meth.. 3 Hours.

Review of difference methods for ordinary differential equations including Runge-Kutta, multistep, adaptive stepsizing, and stiffness; finite difference versus finite element; elliptic boundary value problems, iterative solution methods, self-adjoint elliptic problems; parabolic equations including consistency, stability, and convergence, Crank-Nicolson method, method of lines; first order hyperbolic systems and characteristics, Lax-Wendroff schemes, method of lines for hyperbolic equations.

MA 567. Gas Dynamics. 3 Hours.

Euler's equations for inviscid flows, rotation and vorticity, Navier-Stok.

Prerequisites: MA 252 [Min Grade: C] and (MA 360 [Min Grade: C] or MA 560 [Min Grade: C])

MA 568. Numerical Analysis I. 3 Hours.

Introduction to Matlab, integration, interpolation, rational approximation, splines, numerical methods for ordinary differential equations, ordinary differential equation and modeling, minimization of functions.

Prerequisites: MA 252 [Min Grade: C]

MA 569. Numerical Analysis II. 3 Hours.**MA 570. Differential Geometry I. 3 Hours.**

Theory of curves and surfaces: Frenet formulas for curves, first and second fundamental forms of surfaces. Global theory; abstract surfaces, manifolds, Riemannian geometry.

Prerequisites: MA 126 [Min Grade: C]

MA 571. Differential Geometry II. 3 Hours.

Theory of curves and surfaces: Frenet formulas for curves, first and second fundamental forms of surfaces. Global theory; abstract surfaces, manifolds, Riemannian geometry.

Prerequisites: MA 126 [Min Grade: C]

MA 572. Geometry I. 3 Hours.

The axiomatic method; Euclidean geometry including Euclidean constructions, basic analytical geometry, transformational geometry, and Klein's Erlanger Program; introduction to fractal geometry. Course integrates intuition/ exploration and proof/explanation.

Prerequisites: MA 124 [Min Grade: C] or MA 125 [Min Grade: C]

MA 573. Geometry II. 3 Hours.

Analytical geometry, Birkhoff's axioms, and the complex plane; structure and representation of Euclidean isometries; plane symmetries; non-Euclidean (hyperbolic) geometry and non-Euclidean transformations; fractal geometry; algorithmic geometry. Course integrates intuition/ exploration and proof/explanation. Project and report or oral presentation required.

Prerequisites: MA 472 [Min Grade: C] or MA 572 [Min Grade: C]

MA 574. Intro to Topology I. 3 Hours.

Separable metric spaces, basis and sub-basis, continuity, compactness, completeness, Baire category theorem, countable products, general topological spaces, Tychonov theorem.

Prerequisites: MA 126 [Min Grade: C]

MA 575. Intro to Topology II. 3 Hours.

Separable metric spaces, basis and sub-basis, continuity, compactness, completeness, Baire category theorem, countable products, general topological spaces, Tychonov theorem.

Prerequisites: MA 126 [Min Grade: C]

MA 584. Mathematical Finance. 3 Hours.

The notion of no arbitrage. Interest, compounding, bonds. Review of mean, variance, and covariance. Portfolio management: risk and return. Forwards and Futures. Put-call parity. Martingales and conditional expectation. The binomial model. Fundamental theorems of asset pricing. Brownian motion (heuristics). Ito's formula and Girsanov's theorem (heuristics). The Black-Scholes-Merton formula. Interest rates. The binomial model for stochastic interest rates.

MA 585. Intro to Probability. 3 Hours.

Probability spaces, combinatorics, conditional probabilities and independence, Bayes rule, discrete and continuous distributions, mean value and variance, moment generation function, joint distributions, correlation, Central Limit Theorem, Law of Large Numbers, random walks, Poisson process.

MA 586. Mathematical Statistics. 3 Hours.

Confidence intervals, hypothesis testing, analysis of variance and covariance, maximum likelihood estimates, linear regression, tests of fit, robust estimates and tests.

Prerequisites: MA 485 [Min Grade: C] or MA 585 [Min Grade: C]

MA 587. Advanced Probability. 3 Hours.

Foundation of probability, conditional probabilities, and independence, Bayes theorem, discrete and continuous distributions, joint distributions, conditional and marginal distributions, convolution, moments and moment generation function, multivariable normal distribution and sums of normal random variables, Markov chains.

Prerequisites: MA 485 [Min Grade: B] or MA 585 [Min Grade: B]

MA 590. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 591. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 592. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 593. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 594. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 595. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 596. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 597. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 598. Research in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 599. Research in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 610. Intro to Set Theory. 3 Hours.

Set theory, products, relations, orders and functions, cardinal and ordinal numbers, transfinite induction, axiom of choice, equivalent statements.

MA 631. Linear Algebra. 3 Hours.

Vector spaces and their bases; linear transformations; eigenvalues and eigenvectors: Jordan canonical form; multilinear algebra and determinants; norms and inner products.

MA 632. Abstract Algebra. 3 Hours.

Propositional and predicate logic; set, relations, and functions; the induction principle; Groups, in particular symmetry groups, permutations groups, and cyclic groups; cosets and quotient groups; group homomorphisms; rings, integral domains, and fields; ideals and rings homomorphisms; factorization; polynomial rings.

Prerequisites: MA 534 [Min Grade: B] or MA 631 [Min Grade: B]

MA 642. Calculus of Several Variables. 3 Hours.

Functions of several variables; total and partial derivatives; the Implicit function Theorem; integration of differential forms; Stokes's Theorem.

Prerequisites: MA 541 [Min Grade: B]

MA 645. Real Analysis I. 3 Hours.

Abstract measures and integration; positive Borel measures; L_p-spaces.

Prerequisites: MA 642 [Min Grade: B]

MA 646. Real Analysis II. 3 Hours.

Complex measures and the Radon-Nikodym theorem; differentiation; integration on product spaces and Fubini's theorem.

Prerequisites: MA 645 [Min Grade: B]

MA 648. Complex Analysis. 3 Hours.

The algebraic and topological structure of the complex plane; analytic functions; Cauchy's integral theorem and integral formula; power series; elementary functions; and their Riemann surfaces; isolated singularities and residues; the Laurent expansion; the Riemann mapping theorem.

Prerequisites: MA 642 [Min Grade: B]

MA 650. Differential Equations. 3 Hours.

Separable, linear, and exact first order equations; existence and uniqueness theorems; continuous dependence of solutions on data and initial conditions; first order systems and higher order equations; stability for two-dimensional linear systems; higher order linear systems; boundary value problems; stability theory.

Prerequisites: MA 642 [Min Grade: B]

MA 655. Partial Differential Equations. 3 Hours.

This course covers first order partial differential equations, elliptic equations, parabolic equations, and hyperbolic equations.

Prerequisites: MA 642 [Min Grade: C] or MA 650 [Min Grade: C]

MA 660. Numerical Linear Algebra. 3 Hours.

Vector and matrix norms; the singular value decomposition; stability, condition numbers, and error analysis; QR factorization; least squares problems; computation of eigenvalues and eigenvectors; iterative methods.

Prerequisites: MA 631 [Min Grade: B]

MA 661. Modeling With PDE. 3 Hours.

Practical examples of partial differential equations; derivation of partial differential equations from physical laws; introduction to MATLAB and its PDE Toolbox, and other PDE packages such as FEMLAB using practical examples; brief discussion of finite difference and finite element solution methods; introduction to continuum mechanics and classical electrodynamics; parallel programming using MPI and the mathematics department Beowulf system; specialized modeling projects in topics such as groundwater modeling, scattering of waves, medical and industrial imaging, fluid mechanics, and acoustic and electromagnetic applications.

MA 663. Operations Research I. 3 Hours.

Mathematical optimization techniques. Formulation, solution, and analysis of problems arising from business, engineering, and science.

Prerequisites: MA 227 [Min Grade: C]

MA 664. Operations Research II. 3 Hours.

Mathematical optimization techniques. Formulation, solution, and analysis of problems arising from business, engineering, and science.

MA 665. Partial Differential Equations: Finite Differential Methods. 3 Hours.

Review of difference methods for ordinary differential equations including Runge-Kutta, multi-step, adaptive step-sizing, and stiffness; finite difference versus finite element; elliptic boundary value problems; iterative solution methods, self-adjoint elliptic problems; parabolic equations including consistency, stability, and convergence, Crank-Nicolson method, method of lines; first order hyperbolic systems and characteristics Lax-Wendroff schemes, methods of lines for hyperbolic equations.

Prerequisites: MA 360 [Min Grade: C] or MA 560 [Min Grade: C] or MA 455 [Min Grade: C] or MA 555 [Min Grade: C]

MA 668. Numerical Analysis I. 3 Hours.

Integrals, interpolation, rational approximation, numerical solution of ordinary differential equations, iterative solution of algebraic equations in single variable, least squares. Gaussian elimination for solution of linear equations.

MA 669. Numerical Analysis II. 3 Hours.

Integrals, interpolation, rational approximation, numerical solution of ordinary differential equations, iterative solution of algebraic equations in single variable, least squares. Gaussian elimination for solution of linear equations.

Prerequisites: MA 668 [Min Grade: B]

MA 670. Topology I. 3 Hours.

Definition of topologies; closure; continuity; product topology; metric spaces; quotient spaces.

Prerequisites: MA 631 [Min Grade: B]

MA 671. Topology II. 3 Hours.

Connectedness, completeness and compactness (in particular in metric spaces); countability and separation axioms; Tychonoff's theorem; homotopy; partitions of unity. PreRequisite: MA670 with a grade of B or Permission of Instructor.

Prerequisites: MA 670 [Min Grade: B]

MA 675. Differential Geometry. 3 Hours.

Local and global theory of curves and surfaces; Fenchel's theorem; the first and second fundamental forms; surface area; Bernstein's theorem; Gauss's theorem egregium; local intrinsic geometry of surfaces; Riemannian surfaces; Lie derivatives; covariant differentiation; geodesics; the Riemann curvature tensor; the second variation of arclength; selected topics in the global theory of surfaces.

MA 680. Probability. 3 Hours.

Combinatorics; probability spaces; independence and conditional probability; discrete and continuous random variables; probability distributions and density functions; the law of large numbers; the central limit theorem.

MA 687. Advanced Probability. 3 Hours.

Foundation of probability, conditional probabilities, and independence, Bayes theorem, discrete and continuous distributions, joint distributions, conditional and marginal distributions, convolution, moments and moment generation function, multivariable normal distribution and sums of normal random variables, Markov chains.

Prerequisites: MA 485 [Min Grade: B] or MA 585 [Min Grade: B]

MA 690. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 691. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 692. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 693. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 694. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 695. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 696. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 697. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 698. M Lev Non-Thesis Res. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 699. Research for Thesis. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

Prerequisites: GAC M

MA 740. Advanced Complex Analysis. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

MA 745. Functional Analysis I. 3 Hours.

Normed and Banach spaces; inner product and Hilbert spaces; linear functionals and dual spaces; operators in Hilbert spaces; theory of unbounded sesquilinear forms; Hahn-Banach, open mapping and closed graph theorems; spectral theory.

MA 746. Functional Analysis II. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 747. Linear Operators in Hilbert Space. 3 Hours.

Hilbert space; Bessel's inequality; Parseval's formula; bounded and unbounded linear operators; representation theorems; the Friedrichs extension; the spectral theorem for self-adjoint operators; spectral theory for Schrödinger operators.

MA 748. Fourier Transforms. 3 Hours.

Fourier transform and inverse transform to tempered distributions; applications to partial differential equations.

MA 750. Advanced Ordinary Differential Equations. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 753. Nonlinear Analysis. 3 Hours.

Selected topics including degree theory, bifurcation theory, and topological methods.

MA 755. Advanced Partial Differential Equations. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 760. Dynamical Systems I. 3 Hours.

Continuous dynamical systems; limit sets; centers of attraction; recurrence; stable and wandering points; flow boxes, and monotone sequences in planar dynamical systems; Poincaré-Bendixson theorem.

MA 761. Dynamical Systems II. 3 Hours.

Discrete dynamical systems; hyperbolicity; symbolic dynamics; chaos; homoclinic orbits; bifurcations; attractors (theory and examples).

MA 770. Continuum Theory. 3 Hours.

Pathology of compact connected metric spaces; inverse limits; boundary bumping theorem; Hahn-Muzukiewicz theorem; composants; chainable and circle-like continua; irreducibility; separation; unicoherence; indecomposability.

MA 772. Complex Analytic Dynamics. 3 Hours.

Riemann surfaces; iteration theory of polynomials, rational functions and entire functions; fixed point theory; Mandelbrot set; Julia sets; prime ends; conformal mappings.

MA 774. Algebraic Topology. 3 Hours.

Covering spaces; introduction to homotopy theory; singular homology, cohomology.

MA 776. Advanced Differential Geometry. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 781. Differential Topology I. 3 Hours.

A study of differentiable structures on manifolds, primarily from a global viewpoint: smooth mappings including diffeomorphisms, immersions and submersions; submanifolds and transversality.

Prerequisites: MA 645 [Min Grade: B] and MA 675 [Min Grade: B]

MA 782. Differential Topology II. 3 Hours.

A continuation of MA 781, with further applications such as Morse Theory.

MA 790. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 791. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 792. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 793. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 794. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 795. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 796. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 797. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 798. Non-Dissertation Research and Preparation for Comp. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 799. Dissertation Research. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

Prerequisites: GAC D

MBA-Master of Business Admin Courses

MBA 601. Accounting and Finance for Managers. 3 Hours.

Decision oriented survey course of the principles of both financial accounting and financial management. Broad study of the basic concepts and tools of financial accounting and finance from both the theoretical and practical perspectives. Topics include financial reporting responsibilities of management, analysis and interpretation of financial statements, and the application of time value concepts to the valuation of stocks, bonds, and capital projects.

MBA 608. Strategic Cost Analysis and Decision Making. 3 Hours.

Determination and use of cost data for decision making, control, and evaluation of performance, and formulation of goals and budgets. The strategic context of managerial decision making is emphasized.

MBA 610. Strategic Cost Management. 3 Hours.

Determination and use of cost data for decision making, control, and evaluation of performance, and formulation of goals and budgets. The strategic context of managerial decision making is emphasized.

Prerequisites: MBA 601 [Min Grade: C] or MBA 601 [Min Grade: C]

MBA 611. Management Information Systems. 3 Hours.

Applications of information and management sciences to design and use of decision-oriented systems.

MBA 612. Corporate Governance. 3 Hours.

This course examines the process by which individuals inside and outside a publicly-traded or other complex organization seek to govern the organization's activities, including boards of directors, shareholders, management, independent auditors, internal risk managers, and the Securities and Exchange Commission.

MBA 613. Information Security Management. 3 Hours.

Develop an understanding of key information security concepts. Develop an understanding of how people, technology and organizational policies should be developed and managed to safeguard an organization's information resources. Learn how to manage under uncertainty and risk. Develop policies and procedures to make information systems secure. Learn how to audit and recover from security breaches.

MBA 614. Social Media and Virtual Communities in Business. 3 Hours.

This course focuses on how social media and virtual communities are changing business in fundamental ways. Students gain practical facility in the use of social media tools and learn meta-skills like how to use new social media tools, how to use filters to make sense of social media, and how to curate news and reports in a manner that contributes to business knowledge and intellect.

MBA 616. Web Analytics. 3 Hours.

The Web Analytics course introduces technologies and tools used to realize the full potential of web sites. The course focuses on collection and use of web data such as web traffic and visitor information to design web sites that will enable firms to acquire, convert, and retain customers.

MBA 617. Introduction to Business Intelligence. 3 Hours.

Business Intelligence is an umbrella term describing a wide range of events and activities, hardware and software systems, and methods and algorithms that revolve around a central theme-using data to improve business decision making. This course is an introductory level exposition to this exciting new field with the emphasis of providing a descriptive understanding to the following major components of business intelligence: data warehousing, business performance management, data mining, and business intelligence implementation.

MBA 618. Technology Based Project Management. 3 Hours.

Equips students with the fundamental principles of project management required for successfully implementing IT solutions.

MBA 619. Information Technology and Business Strategy. 3 Hours.

Designed to improve students' understanding of business strategies and the technology management practices that support them, this course focuses on understanding the basic concepts and terminology of information technology and developing insight into the role of information technology in the strategy and management of organizations.

MBA 621. Topics in Corporate Finance. 3 Hours.

An advanced course in finance with emphasis on special topics such as financial planning, working capital management, leasing, hybrid financing, real options, and international capital budgeting. Case studies are used.

Prerequisites: MBA 601 [Min Grade: C] or MBA 601 [Min Grade: C]

MBA 622. Portfolio Theory and Construction. 3 Hours.

Theoretical and practical aspects of investments and portfolio management. Preq: MBA 621.

MBA 623. Mergers and Acquisitions. 3 Hours.

In-depth examination, study, and analysis of current issues and problems in selected areas of finance. Preq: MBA 621.

MBA 624. Global Financial Management. 3 Hours.

Financial analysis and decision-making in international context. All traditional areas of corporate finance explored. Preq: MBA 621.

MBA 625. Real Estate Decision Analysis. 3 Hours.

Master's level course designed to provide students with the tools and analytical framework for making real estate decisions. Preq: MBA 621.

MBA 626. Credit Markets and Instruments. 3 Hours.

Detailed coverage of the credit markets (Money and Bond markets) of the U.S. and an introduction to the international aspects of those instruments. Preq: MBA 621.

MBA 627. Financial Risk Analysis and Management. 3 Hours.

Exploration of issues in the measurement, analysis, and management of financial risk including interest rate, exchange rate, and commodity price risks. Preq: MBA 621.

MBA 628. Valuation Seminar. 3 Hours.

A blend of theory and practice to gain knowledge and skills in the valuation of businesses and interests therein. Preq: MBA 621.

MBA 629. Treasury Management. 3 Hours.

Multi-disciplinary approach to analysis of financial statements and working capital management. Financial planning, corporate liquidity, and short-term financial policy issues. Preq: MBA 621.

MBA 630. Social Ethical and Legal Environment. 3 Hours.

Social, ethical, and legal environment in which business enterprise operates domestically and internationally.

MBA 631. Management and Organizations. 3 Hours.

Course focuses on both the internal organizational environment, specifically organizational behaviors, and externally, the legal, ethical, and social environment both domestically and internationally. Students will be able to identify policy issues externally from the legal, social, and ethical environment. Students will also gain an understanding of internal organizational behavior.

MBA 632. Managerial Processes and Behavior. 3 Hours.

Elements of organizational behavior and their dynamic interaction. Emphasis on individual and small group behavior in organization.

MBA 633. Operations Management. 3 Hours.

Introduction to management planning and control techniques applicable to the operations portion of various enterprises. Preq: MBA 661.

MBA 634. Strategic Management. 3 Hours.

The integration of management, finance, accounting, marketing, economics, production, information technology, and decision making concepts through the study of business policy and strategy. Must be in last term in the MBA program to register. Permission of advisor required.

MBA 635. International Business Policy. 3 Hours.

Problems and strategic considerations of firms engaged in international business. Preq: MBA 631.

MBA 636. Human Resource Administration. 3 Hours.

Critical management theory as applied to human resource problems such as employment, employee education and training, labor management, health and safety, compensation, and human resources research. Preq: MBA 631.

MBA 637. Operations and Supply Chain Management. 3 Hours.

Concepts and principles necessary to manage the operations and supply chain function in both service and manufacturing organizations. Topics include planning, controlling, directing, and organizing of people, facilities, and materials involved in operations and supply chain management. Global considerations also presented.

MBA 641. Macroeconomics Analysis and Decision Making. 3 Hours.

Macroeconomic analysis; modern theory of aggregate demand and supply; forecasting and link between business firm and micro environment. Preq: MBA 662.

MBA 642. Economics for Managers. 3 Hours.

Enables students to understand core microeconomic and macroeconomic concepts and how economics theory can be used to direct managers in understanding economic forces and making rational global and domestic economic decisions.

MBA 645. Game Theory in Industrial Organization. 3 Hours.

Introduces students to the logic of game theory, in the context of selected topics in the theory of industrial organization. Emphasis will be on applying game-theoretic logic to generic business issues, studied as cases. Preq: MBA 642.

MBA 651. Marketing Strategy. 3 Hours.

Problems of marketing managers; planning, implementing, evaluating, and controlling marketing activities.

MBA 652. Sales Management. 3 Hours.

This course focuses on the strategic role of an effective sales force in the organization's total marketing effort and business strategy. Students learn to formulate, implement, and evaluate a sales program. Topics include developing sales goals, creating a sales organizational structure, building a sales program, leading and motivating the sales force.

MBA 653. Marketing Analysis and Decision Making. 3 Hours.

Fundamentals of market-based management and the impact of marketing decisions on profitability. Core themes include customer value, customer satisfaction and marketing performance metrics. Students acquire an understanding of important marketing tools by applying them to key marketing mix decisions.

MBA 654. International Marketing. 3 Hours.

Examination of international marketing activities, including environmental issues, marketing strategy, and tactical considerations in entering foreign markets. Preq: MBA 651.

MBA 658. Applied Marketing Research. 3 Hours.

This course covers the fundamentals of the marketing research process, including problem definition, research design, research performance, collecting, inputting and analyzing data using IBM SPSS software, interpretation of statistical results into managerial insights, and the presentation of those results to business managers.

Prerequisites: MBA 662 [Min Grade: C]

MBA 662. Quantitative Analysis for Business Managers. 3 Hours.

Covers a wide range of topics in quantitative analysis for managerial decision making. The goal is to provide students with essential analytical skills needed to make better business decisions with an emphasis on proficiency using Microsoft Excel.

MBA 664. Topics in Operations Research. 3 Hours.

Preq: MBA 661.

MBA 671. Health Care Marketing. 3 Hours.

This class is designed for master level students seeking employment in the healthcare industry. The primary objective of this course is to provide students with a comprehensive overview of the marketing fundamentals in the health care environment. This course also examines health care organizations as customers in a B2B environment.

MBA 673. Technology Venture Business Planning. 3 Hours.

The business plan is the DNA or genetic map of a technology venture. It is the foundation for the capital raise, as well as the roadmap for operational milestones. Unfortunately, most business plans focus on internal strategy rather than a comprehensive assessment of the competitive landscape. Therefore, particular attention will be paid to market research and competitive analysis. Preq: MBA 650 or HA 671.

MBA 676. MBA Internship. 3 Hours.

Offers qualified graduate students the chance to gain first-hand experience in a local business while receiving academic credit. Preq: MBA 631 and MBA 651.

MBA 681. From Idea to IPO. 3 Hours.

This course is specifically designed to give graduate students in business, medicine, and engineering a deeper understanding of the issues involved in determining how to take the right idea from the laboratory to the marketplace.

MBA 682. The Art of the Deal: Negotiating Technology Agreements. 3 Hours.

This course takes an in-depth look at various negotiating strategies and addresses issues such as when to sell or when to license.

MBA 690. Special Topics. 3 Hours.

Selected topics in business: graduate level.

MBA 691. MBA Internship. 1-3 Hour.

Individualized study directed by faculty member. Requires permission of instructor.

MCH-Maternal and Child Health Courses

MCH 600. Issues in Maternal and Child Health. 3 Hours.

Examination of current issues affecting the health of women through the childbearing years, children from infancy through adolescence, and family systems. A framework for the identification of needs, influences, and strategies are developed for analysis and problem solving.

MCH 602. Child Health and Development: Womb to Young Adulthood. 3 Hours.

Focus on the key developmental processes that influence health outcomes from the prenatal period through early childbearing years. Processes and outcomes will be linked to MCH programs, resources, and barriers relevant to these populations.

MCH 603. Reproductive Health in Developing Countries. 3 Hours.

Examines key areas of reproductive health including contraception and family planning, sexual health and sexually transmitted diseases, unwanted pregnancies, health pregnancy and safe motherhood, and adolescent reproductive health. Measurement, prevalence, determinants and consequences of reproductive health problems. Issues of survey design, research methods, and analysis. Development, implementation, and evaluation of reproductive health policies and services to low-to-middle income countries.

MCH 604. Principles of Public Health Surveillance. 3 Hours.

Introduction to principles and methods of public health surveillance as a fundamental epidemiologic activity for disease monitoring, prevention, and control. Emphasizes application of surveillance methods to problems in MCH. Note: Only open to graduate non-degree seeking students as space permits.

MCH 605. Basic Research Methods for Maternal and Child Health Practitioners. 3 Hours.

Course provides an introduction to basic research methods with a specific focus on their use in the field of Maternal and Child Health (MCH). The course purpose is to facilitate the development of knowledge and skills related to the review, assessment, and conduct of data-based research.

MCH 606. Basics of Community Evaluation: An Integrated Approach. 3 Hours.

Facilitates development of knowledge and skills related to the use of a conceptual framework for evaluating community-oriented and community-based initiatives of projects or programs. Primary focus is on applying and integrating knowledge and skills in collaborative and participatory community evaluation. NOTE: In lieu of HB 641 or MCH 605, any public health core quantitative course or equivalent may be considered as a prerequisite.

Prerequisites: MCH 605 [Min Grade: C] or HB 641 [Min Grade: C]

MCH 607. Nutrition in Maternal Child Health. 3 Hours.

Major nutrition issues within each of the MCH life cycle stages will be presented and discussed, beginning with women's reproductive health including family planning and preconception risk reduction, and continuing through pregnancy, infancy, the preschool and childhood years, and adolescence. Nutritional needs of children with special health care problems will also be addressed.

MCH 608. Project Planning in International Health. 3 Hours.

Global health professionals require skills to identify and delineate problems that face communities in which they work, and the ways to solve them. Often, this requires them to conduct small-scale investigations of their own, either as managers working on specific health projects, or as consultants hired to provide technical expertise. To help students develop these skills, this course provides support for them to work through the process considering in depth, a specific health problem and formulating a scientifically valid and local relevant investigation around it. NOTE: Requires permission of instructor.

MCH 609. Needs Assessment, Program Planning and Evaluation: The Public Health Planning Process. 3 Hours.

To introduce the needs assessment, program planning, and evaluation processes specifically related to public health and to provide practical educational experiences to develop skills in the range of activities needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies.

Prerequisites: MCH 600 [Min Grade: C]

MCH 610. Intro to Public Health. 3 Hours.

Introduction to public health as a profession and discipline which focuses on populations, population health and society's role in monitoring and achieving good health and quality of life. Among the greatest successes in public health in the 20th Century are those related to the improvements in health for women, infants and children. Using primary sources, this course will introduce public health to students by reviewing these achievements and presenting the various disciplines within public health that have collaborated to make the improvements possible. The importance of the appropriate use of data and the scientific method in problem solving for public health is also stressed.

MCH 612. International Children's Rights & Social Justice: Global Perspectives. 3 Hours.

This course is designed to familiarize students with public health and legal issues with regard to children globally. The course will provide background on international law and international human rights law, and international treaties focused particularly on children, followed by the role of public health in achieving these rights and lessening the gap between theory and practice. NOTE: Only available to School of Public Health degree seeking students.

MCH 613. Child Day Care as Prevention and Intervention: A Developmental Perspective. 3 Hours.

To introduce students to basic principles of child development within a public health frame of reference using child care settings as exemplars of how these principles are applied in programs for children and their families.

MCH 614. Public Health Demography. 3 Hours.

Principles of demography (the study of population) as related to public health. The measurement and analysis of fertility, mortality, migration, population size, and composition. Sources and evaluation of demographic data, techniques of population projection. Determinants and consequences of population trends and processes, with applications for health and health care.

MCH 617. Global Health: Principles and Practice. 3 Hours.

This course introduces students to the historical perspective of public health in its global context, examines major policies and themes, and analyzes health problems and prevention priorities in different national contexts. The role of international health agencies is analyzed, including their successes and constraints. NOTE: Requires permission of instructor.

MCH 619. Social Work in Public Health. 3 Hours.

Introduction and overview of the field of public health and the subspecialty of public health social work. Provides practical macro-level skills and explores the role and functions of social workers within major public health programs. Note: Requires permission of instructor.

MCH 658. Readings in MCH. 1-3 Hour.

Critical analysis of literature in single area of maternal and child health under supervision of faculty member.

MCH 660. Fieldwork in Maternal and Child Health. 3 Hours.

Field experience under joint supervision of MCH faculty and agency professionals. Placements in MCH-related programs, and public and private health agencies. Preq: Permission of advisor.

MCH 661. Extended Field Work in Maternal Child Health. 6 Hours.

Full time three-month placement in a Maternal and Child Health or related organization. Usually during the summer. Must complete 2 semesters of full-time course work before registering for this course. Permission of instructor.

MCH 670. Policy Design and Advocacy for Maternal and Child Health Professionals. 2 Hours.**MCH 695. Public Health Integrative Expe. 3 Hours.**

In addition to satisfying the MPH culminating experience requirement this course will provide an opportunity to integrate the knowledge and competencies from the MPH coursework. The course emphasizes the data-driven and applied nature of public health practice. The coursework will be problem-based and focused on a community health planning process and prevention of a health problem. Topical areas will be based on a student self-assessment of the achievement of the required competencies in each of the MPH core disciplines. Students will conduct systematic reviews of relevant literature, perform basic data analysis, and apply other planning and evaluation techniques for a specific global or US population.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and (EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]) and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

MCH 697. Internship. 3-9 Hours.

Field experience under joint direction of appropriate public health faculty member and qualified specialists working in selected aspects of public health.

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

MCH 699. Project Research in Maternal and Child Health. 1-9 Hour.

Research under the direction of faculty member.

MCH 702. Child Health and Development: Womb to Young Adulthood. 3 Hours.

Focus on the key developmental processes that influence health outcomes from the prenatal period through early childbearing years. Processes and outcomes will be linked to MCH programs, resources, and barriers relevant to these populations.

MCH 703. Reproductive Health in Developing Countries. 3 Hours.

Examines key areas of reproductive health including contraception and family planning, sexual health and sexually transmitted diseases, unwanted pregnancies, health pregnancy and safe motherhood, and adolescent reproductive health. Measurement, prevalence, determinants and consequences of reproductive health problems. Issues of survey design, research methods, and analysis. Development, implementation, and evaluation of reproductive health policies and services to low-to-middle income countries.

MCH 707. Nutrition in Maternal and Child Health. 3 Hours.

Major nutrition issues within each of the MCH life cycle stages will be presented and discussed, beginning with women's reproductive health including family planning and preconception risk reduction, and continuing through pregnancy, infancy, the preschool and childhood years, and adolescence. Nutritional needs of children with special health care problems will also be addressed.

MCH 710. Perinatal Epidemiology. 3 Hours.

Contemporary issues in perinatal epidemiology, identification of data sources, analysis and interpretation of data. Measurement, etiology, and prevention of infant mortality emphasized. NOTE: Requires permission of instructor.

MCH 711. Adolescent Sexuality. 3 Hours.

Comprehensive review of the causes and consequences of adolescent sexuality, pregnancy, and parenting. Demographics and time trends; relationship to other problem behaviors of adolescence. NOTE: Only advanced doctoral students (second year and above) can register; masters students must obtain permission of instructor.

MCH 712. Diversity and Cultural/ Linguistic Competency Associated with Health Access, Utilization/Disparities. 3 Hours.

The purpose of this course is to facilitate the opportunity for students to learn about, research, and analyze information specific to the links between sociocultural, race/ethnicity and geographic diversity and indicators of health care access, utilization, and recognized disparities. This course will have an applied policy focus, emphasizing the link between information (data), policy development, and evidence/solution-based practice. NOTE: Permission of instructor required if course work indicated as prerequisites are not met.

Prerequisites: BST 600 [Min Grade: C] and ENH 600 [Min Grade: C] and EPI 600 [Min Grade: C] and HB 600 [Min Grade: C] and HCO 690 [Min Grade: C] and MCH 610 [Min Grade: C]

MCH 713. Child Day Care as Prevention and Intervention. 3 Hours.**MCH 714. Secondary Data Analysis for Public Health Practitioners. 3 Hours.**

To provide (1) an introduction to the analysis of secondary data related to the field of maternal and child health, (2) an opportunity for students to undertake an investigation of a research hypothesis using a secondary dataset, and (3) an introduction to evaluating the appropriateness of statistical analyses employed in published journal articles. Preq: MPH Core, MCH 605 or BST 619 and EPI 626/627 or BST 626/627 or permission of instructor.

Prerequisites: BST 600 [Min Grade: C]

MCH 720. Comparative Maternal and Child Health in Developing and Developed Nations. 3 Hours.

Health problems and solution strategies for mothers and children of third world. Comparisons drawn from developed countries illustrate successes and failures in MCH practices.

MCH 793. DrPH Practicum. 6 Hours.

Field experience course that bridges professional academic preparation and advanced public health practice. A final grade for the course will be awarded by the faculty practicum advisor and based upon the practicum mentor/supervisor's evaluation and the student's final product.

MCH 795. Directed Readings for Doctoral Students in Maternal and Child Health. 1-3 Hour.

Critical analysis of literature in an area of maternal and child health. Student develops annotated bibliography and reports literature review. Student seminar presentation may be required.

MCH 796. Doctoral Seminar in MCH. 1 Hour.

Range of theoretical and practical research, programmatic, advocacy, service, and policy issues, and leadership.

MCH 797. Directed Readings for DrPH Comprehensive Exam in Maternal Child Health. 3 Hours.

Assists students in preparing for the comprehensive exam. Doctoral students may register in the quarter in which they prepare for and take their comprehensive exam.

MCH 798. Dissertation Protocol Development in Maternal and Child Health. 3 Hours.

Assists students with their dissertation protocol development. doctoral students may register for this course during the period in which they are preparing their doctoral dissertation protocol.

MCH 799. Dissertation Research in Maternal and Child Health. 1-9 Hour.

Research for dissertation under direction of dissertation committee. NOTE: Must be admitted to candidacy before registering for this course. Prerequisites: GAC A

MCHW-Maternal and Child Health Courses**MCHW 605. Basic Research Methods for Maternal and Child Health Practitioners. 3 Hours.**

This course provides an introduction to basic research methods with a specific focus on their use in the field of Maternal and Child Health (MCH). The course purpose is to facilitate the development of knowledge and skills related to the review, assessment, and conduct of data-based research.

ME-Mechanical Engineering Courses**ME 511. Intermediate Fluid Mechanics. 3 Hours.**

Applications of fluid dynamic principles to engineering flow problems such as turbo-machinery flow and one-dimensional compressible flow. Vorticity, potential flow, viscous flow, Navier-Stokes solutions, and boundary layers. Introduction to Fluid Mechanics or equivalent is a recommended prerequisite for this course.

ME 521. Introduction to Computational Fluid Dynamics Basics. 3 Hours.

Governing equations for fluid flows, classifications of flow regimes, and approaches to analyze fluid flow problems. Introduction to Computational Fluid Dynamics (CFD), mesh generation, boundary conditions, numerical solution of equations governing fluid flows, and visualization. Hands-on exercises using a commercial CFD solver.

ME 530. Vehicular Dynamics. 3 Hours.

Introduction to the fundamentals of mechanics and analytical methods for modeling vehicle dynamics and performance. Topics include tire-road interaction modeling, vehicle longitudinal dynamics and traction performance, lateral dynamics, handling, stability of motion and rollover, as well as, contribution of the drivetrain system, steering system and suspension configurations to the dynamics of a vehicle. Software applications, projects, and exposure to hardware and systems are used to reinforce concepts. Dynamics or equivalent is a recommended prerequisite for this course.

ME 545. Combustion. 3 Hours.

Evaluation of the impact of fuel characteristics and operating conditions on the performance of coal-fired electric utility steam-raising plant and the prospects for continued reliance on coal as fuel for electric power generation. The phenomena emphasized are the behavior of turbulent jets; ignition, devolatilization and combustion of coal particles; radiative heat transfer and the effect of ash deposits on heat transfer; formation of air pollutants and their removal from combustion products; integrated gasification combined cycle; and capture and sequestration of carbon dioxide. Thermodynamics II, Introduction to Fluid Mechanics, and Introduction to Heat Transfer or equivalents are recommended prerequisites for this course.

ME 548. Internal Combustion Engines. 3 Hours.

Fundamentals of reciprocating internal combustion engines: engine types, engine components, engine design and operating parameters, thermo-chemistry of fuel-air mixtures, properties of working fluids, ideal models of engine cycles, engine operating characteristics, gas-exchange processes, fuel metering, charge motion within the cylinder, combustion in spark-ignition and compression ignition engines. Software applications, projects, and exposure to hardware and systems are used to reinforce concepts. Dynamics and Thermodynamics II or equivalents are recommended prerequisites for this course.

ME 549. Power Generation. 3 Hours.

Application of thermodynamics, fluid mechanics, and heat transfer to conversion of useful energy. Includes terrestrial and thermodynamic limitations, fossil fuel power plants, renewable energy sources, and direct energy direct energy conversion. Thermodynamics II or equivalent is a recommended prerequisite for this course.

ME 554. Heating, Ventilating & AC. 3 Hours.

Fundamentals and practice associated with heating, ventilating, and air conditioning; study of heat and moisture flow in structures, energy consumption, and design of practical systems. Introduction to Heat Transfer or equivalent is a recommended prerequisite for this course.

ME 555. Thermal-Fluid Systems Design. 3 Hours.

Comprehensive design problems requiring engineering decisions and code/Standard compliance. Emphasis on energy system components: piping networks, pumps, heat exchangers. Includes fluid transients and system modeling. Introduction to Heat Transfer is a recommended prerequisite for this course.

ME 564. Introduction to Finite Element Method. 3 Hours.

Concepts and applications of finite element method. Development and applications of basic elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept to several areas of mechanics. Mechanics of Solids or equivalent is a recommended prerequisite for this course.

ME 575. Mechanical Vibrations. 3 Hours.

Development of equations of motion for free and forced single-degree-of-freedom (SDOF) systems. Multi-degree-of-freedom systems. Transient response, support motion and vibration isolation for SDOFs. Vibration absorbers, generalized mass and stiffness, orthogonality of normal modes, and root solving and Gauss elimination procedures. Chelosky decomposition and Jacobi diagonalization methods.

ME 590. Special Topics in (Area). 1-4 Hour.**ME 611. Advanced Fluid Mechanics. 3 Hours.**

Fundamental laws of motion for viscous fluid, classical solutions of the Navier-Stokes equations, inviscid flow solutions, laminar boundary layers, and stability criteria.

ME 613. Introduction to Computational Fluid Dynamics. 3 Hours.

Review of governing equations of fluid dynamics, mathematical behavior of partial differential equations, basic aspects of discretization, basic CFD techniques, basic grid generation, coordinate transformations, advanced numerical schemes, future CFD methodology. A knowledge of a computer language is required.

ME 614. Advanced Computational Fluid Dynamics. 3 Hours.

Finite Volume Scheme, Eigenvalues and Eigenvectors, Method of Characteristics, Upwind Schemes, Flux Vector Splitting, Flux Difference Splitting, Explicit and Implicit Schemes, Flux Jacobians, Newton Method, Boundary Conditions, Weak Solutions, TVD, PISO Methods.

ME 615. Introduction to Turbulent Flows. 3 Hours.

Characteristics of turbulence, length and time scales, energy cascade, vorticity stretching, Reynolds averaging technique, Closure problem, Boussinesq hypothesis, Eddy viscosity concepts, introduction to zero-, one-, and two-equation models, Reynolds stress model.

ME 642. Statistical Mechanics. 3 Hours.

Explanation of macroscopic thermodynamic and transport properties, based upon classical and quantum mechanical descriptions of elementary particles, atoms, and molecules. Analysis of the distributions of these objects over their allowed energy states and the relationships between those distributions and macroscopic properties. Thermodynamics II or equivalent is a recommended prerequisite for this course.

ME 650. Transport Phenomena. 3 Hours.

Laminar flow transports: momentum transfer (Couette/Poiseuille flows), energy transfer (free/forced convections and conductions), and mass transfer; equation of state, turbulence, chemical reactions, and numerical methods solving transport equations. Introduction to Fluid Mechanics and Introduction to Heat Transfer or equivalents are recommended prerequisites for this course.

ME 661. Math Methods in EGR I. 3 Hours.

Mathematical theory and solutions methods to problems in engineering including advanced ordinary differential equations; eigenvalue problems; multi-variable calculus and implicit functions; curve, surface and volume representation and integration; Fourier integrals and transforms; separation of variables and transform techniques for solution of partial differential equations. Differential Equations or equivalent is recommended as a prerequisite for this course.

ME 662. Math Methods in EGR II. 3 Hours.

Mathematical theory and solution methods to problems in engineering including Scalar and vector field theory advanced partial differential equations, analysis using complex variables, conformal mapping, complex integral calculus, Green's functions, perturbation methods, and variational calculus. Math Methods in EGR I or equivalent is recommended as a prerequisite for this course.

ME 665. Computational Methods in EGR. 3 Hours.

Applications of computers to solution of problems in engineering, including matrices, roots of equations, solution of simultaneous equations, curve fitting by least squares, differentiation and integration, differential and partial differential equations. Differential Equations and Computational Engineering or equivalents are recommended prerequisites for this course.

ME 670. Intro to Continuum Mechanics. 3 Hours.

Fundamentals and application of mechanics principles to problems in continuous media. Matrix and tensor mathematics, fundamentals of stress, kinematics and deformation of motion, conservation equations, constitutive equations and invariance, linear and nonlinear elasticity, classical fluids, linear viscoelasticity. Mechanics of Solids and Differential Equations or equivalents are recommended prerequisites for this course.

ME 679. Advanced Finite Element Analysis. 3 Hours.

Concepts and applications of finite element method. Development and applications of various elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept and model development to fluid, heat transfer, and solid mechanics problems. Introduction to Fluid Mechanics, Introduction to Heat Transfer, and Mechanics of Solids or equivalents are recommended prerequisites for this course.

ME 680. Numerical Mesh Generation. 3 Hours.

Mesh generation strategies, error analysis, and their role in field simulation systems and engineering applications, Structured and Unstructured meshing algorithms including algebraic, elliptic, parabolic, hyperbolic, advancing front, and Delaunay triangulation methods, computer aided geometry techniques and surface mesh generation schemes.

ME 682. Computer-Aided Geometry Design. 3 Hours.

Bezier curves, polynomial interpolation, splines, NURBS, tensor product Bezier surfaces, composite surfaces, differential geometry, parametric curves and surfaces, decimation and refinement algorithms.

ME 686. Design Optimization Techniques. 3 Hours.

Methods of numerical optimization techniques applied to engineering design. Methods for optimization of constrained and unconstrained, single and multiple variables, multiobjective functions. Surrogate-based statistical optimization and multidisciplinary optimization framework.

ME 688. Fluid-Structure Interactions. 3 Hours.

Modeling and simulation of fluid-structure interaction (FSI) phenomena using computational methods. The Arbitrary Lagrangian Eulerian (ALE) formulation, a variety of interpolation methods, mesh movement and time mapping algorithms. Solution of FSI problems using interface codes.

ME 689. Enabling Technology Tools. 3 Hours.

Computational methods and tools for simulations and modeling of mechanical and biomedical applications. Numerical geometry, numerical mesh generation, and scientific visualization tools will be introduced and applied.

ME 690. Special Topics in (Area). 1-4 Hour.**ME 691. Individual Study in (Area). 1-4 Hour.**

Individual Study In (Area).

ME 693. Journal Club in Mechanical Engineering. 1 Hour.**ME 694. Seminars in Mechanical Engineering. 1 Hour.****ME 698. Non-Thesis Research. 1-12 Hour.****ME 699. Thesis Research. 1-12 Hour.**

Prerequisites: GAC M

ME 711. Advanced Fluid Mechanics. 3 Hours.

Fundamental laws of motion for viscous fluid, classical solutions of the Navier-Stokes equations, inviscid flow solutions, laminar boundary layers, and stability criteria.

ME 713. Introduction to Computational Fluid Dynamics. 3 Hours.

Review of governing equations of fluid dynamics, mathematical behavior of partial differential equations, basic aspects of discretization, basic CFD techniques, basic grid generation, coordinate transformation, advanced numerical schemes, future CFD methodology. A knowledge of a computer language is required.

ME 714. Advanced Computational Fluid Dynamics. 3 Hours.

Finite Volume Scheme, Eigenvalues and Eigenvectors, Method of Characteristics, Upwind Schemes, Flux Vector Splitting, Flux Difference Splitting, Explicit and Implicit Schemes, Flux Jacobians. Newton Method, Boundary Conditions, Weak Solutions, TVD, PISD Methods.

ME 715. Introduction to Turbulent Flows. 3 Hours.

Characteristics of turbulence, length and time scales, energy cascade, vorticity stretching, Reynolds averaging techniques. Closure problem, Boussinesq hypothesis, Eddy viscosity concepts, introduction to zero-, one- and two-equation models, Reynolds stress model.

ME 742. Statistical Mechanics. 3 Hours.

Explanation of macroscopic thermodynamic and transport properties, based upon classical and quantum mechanical descriptions of elementary particles, atoms, and molecules. Analysis of the distributions of these objects over their allowed energy states and the relationships between those distributions and macroscopic properties.

ME 750. Transport Phenomena. 3 Hours.

Laminar flow transports: momentum transfer (Couette/Poiseuille flows), energy transfer (free/forced convections and conductions), and mass transfer; equation of state, turbulence, chemical reactions, and numerical methods solving transport equations.

ME 761. Math Methods in EGR I. 3 Hours.

Mathematical theory and solutions methods to problems in engineering including advanced ordinary differential equations; euigenvalue problems; multi-variable calculus and implicit functions; curve, surface ad volume representation and integration; Fourier integrals and transforms; separation of variables and trnsform techniques for solution of partial differential equations. Differential Equations or equivalent is recommended as a prerequisite for this course.

ME 762. Math Methods in EGR II. 3 Hours.

Mathematical theory and solution methods to problems in engineering including Scalar and vector field theory advanced partial differential equations, analysis using complex variables, conformal mapping, complex integral calculus, Green's functions, perturbation methods, and variational calculus. Math Methods in EGR I or equivalent is a recommended prerequisite for this course.

ME 765. Computational Methods in EGR. 3 Hours.

Applications of computers to solution of problems in engineering, including matrices, roots of equations, solution of simultaneous equations, curve fitting by least squares, differentiation and integration, differential and partial differential equations. Differential Equations and Computational Engineering or equivalent are recommended prerequisites for this course.

ME 770. Intro to Continuum Mechanics. 3 Hours.

Fundamentals and application of mechanics principles to problems in continuous media. Matrix and tensor mathematics, fundamentals of stress, kinematics and deformation of motion, conservation equations, constitutive equations and invariance, linear and nonlinear elasticity, classical fluids, linear viscoelasticity. Mechanics of Solids and Differential Equations or equivalent are recommended prerequisites for this course.

ME 779. Advanced Finite Element Analysis. 3 Hours.

Concepts and applications of finite element method. Development and applications of various elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept and model development to fluid, heat transfer, and solid mechanics problems. Introduction to Fluid Mechanics, Introduction to Heat Transfer, and Mechanics of Solids or equivalent are recommended prerequisites for this course.

ME 780. Numerical Mesh Generation. 3 Hours.

Mesh generation strategies, error analysis, and their role in field simulation systems and engineering applications. Structured and unstructured meshing algorithms including algebraic, elliptic, parabolic, hyperbolic, advancing front, and Delaunay triangulation methods, computer aided geometry techniques and surface mesh generation schemes.

ME 782. Computer-Aided Geometry Design. 3 Hours.

Bezier curves, polynomial interpolation, splines, NURBS, tensor product Bezier surfaces, composite surfaces, differential geometry, parametric curves and surfaces, decimation and refinement algorithms.

ME 786. Design Optimization Techniques. 3 Hours.

Methods of numerical optimization techniques applied to engineering design. Methods for optimization of constrained and unconstrained, single and multiple variables, multiobjective functions. Surrogate-based statistical optimization and multidisciplinary optimization framework.

ME 788. Fluid-Structure Interactions. 3 Hours.

Modeling and simulation of fluid-structure interaction (FSI) phenomena using computational methods. The Arbitrary Lagrangian Eulerian (ALE) formulation, a variety of interpolation methods, mesh movement and time mapping algorithms. Solution of FSI problems using interface codes.

ME 789. Enabling Technology Tools for Scientists and Engineers. 3 Hours.

Computational methods and tools for simulations and modeling of mechanical and biomedical applications. Numerical geometry, numerical mesh generation, and scientific visualization tools will be introduced and applied.

ME 790. Special Topics in ME. 1-6 Hour.

Special Topics in (Area).

ME 791. Individual Study. 1-6 Hour.

Individual Study in (Area).

ME 794. Seminars in Mechanical EGR. 1 Hour.

Seminars in areas of mechanical engineering.

ME 796. IEGR Journal Club. 1 Hour.

Journal club to discuss current research and investigations in areas of interdisciplinary engineering.

ME 798. Non-Dissertation Research. 1-12 Hour.**ME 799. Dissertation Research. 1-12 Hour.**

Prerequisites: GAC D

MED-Medical School Courses**MESC-Marine Environmental Sci Courses****MESC 506. Marine Biology for Teachers. 6 Hours.****MESC 516. Physiology of Marine Animals. 4 Hours.****MESC 538. Marine Zoogeography. 4 Hours.****MESC 539. Oceanology of the Gulf of Mexico. 4 Hours.****MESC 541. Benthic Community Structure. 4 Hours.**

Benthic Community Structure.

MESC 543. Plankton. 4 Hours.**MESC 550. Marine Plant and Animal Interactions. 2 Hours.**

Marine Plant and Animal Interactions.

MESC 560. Marine Geophysical Processes. 3 Hours.**MESC 565. Estuarine Biology. 4 Hours.****MESC 570. Field Marine Science. 2 Hours.****MESC 580. Marine Paleoecology. 4 Hours.****MESC 592. Seagrass Ecosystems. 2 Hours.****MESC 595. Phytoplankton Ecology and Physiology. 2 Hours.**

Phytoplankton Ecology and Physiology.

MESC 611. Marsh Ecology. 4 Hours.

Habitat analysis, natural history studies, and population dynamics of selected marsh organisms. Lecture, laboratory, and fieldwork.

MESC 612. Marine Ecology. 4 Hours.

Bioenergetics, community structure, population dynamics, predation, competition, and speciation in marine ecosystems. Lecture, laboratory, and fieldwork.

MESC 614. Advanced Marine Ecology. 2 Hours.

Mechanisms controlling the distribution of marine organisms. Major concepts in marine ecological theory.

MESC 615. Coastal Ornithology. 4 Hours.

Coastal and pelagic birds, with emphasis on ecology, taxonomy, and distribution. Lecture, laboratory and field trips.

MESC 618. Benthic Ecology. 2 Hours.

Factors controlling life cycles of marine benthic organisms and organization of their communities.

MESC 619. Marine Microbial Ecology. 3 Hours.

Survey of the types of microorganisms found in the marine environment and their interactions with each other and their environment.

MESC 620. Coastal Ecosystems Dynamics. 2 Hours.

Investigation of the structure and function of a variety of coastal ecosystems and evaluation of energy and nutrient processing in disparate ecosystems.

MESC 621. Marine Plankton. 3 Hours.

Taxonomy and biology of marine phytoplankton, bacterioplankton and zooplankton.

MESC 622. Chemical Oceanography. 3 Hours.

An in-depth examination of the chemistry of seawater and its relationship with biological, geological and physical processes in the oceans.

MESC 623. Geological Oceanography. 3 Hours.

Historic and current consequences of both geophysical and classic geological processes as they relate to the marine environment. Tectonic theory, sedimentary processes, stratigraphy, micropaleontology, erosion, and the formation of hydrocarbons.

MESC 625. Physical Oceanography. 3 Hours.

Physical properties of the world's oceans. Waves, tides, circulations, fluctuations, and interactions of the sea with the atmosphere and landmasses.

MESC 626. Biological Oceanography. 3 Hours.

Chemical, physical and geological patterns and processes important in the interaction of organisms and the sea.

MESC 627. Fisheries Oceanography. 2 Hours.

Examination of the relationships between fish life history, recruitment dynamics and harvest potential, and local-, meso-, and global-scale oceanography processes.

MESC 629. Fisheries Techniques. 3 Hours.

Current biological and technological methodologies for studying fishes and aquatic habitats, with emphasis on study design and integration across subdisciplines.

MESC 630. Marine Biogeochemical Process. 2 Hours.

Understanding how biogeochemical processes regulate ecosystem function in the marine environment.

MESC 631. Sediment Biogeochemistry. 3 Hours.

Sediment biogeochemical processes and their effects on nutrient cycles, plant production, and animal distribution.

MESC 632. Ocean Variability and Global Change. 2 Hours.

Examination of large-scale, spatial and temporal variability in the earth/ocean system.

MESC 633. Marine Biogeography & Paleobio. 3 Hours.

Overview of the time course of evolutionary changes in marine ecosystems and the role of historical factors influencing the distribution of marine organisms. Lecture and field trip.

MESC 634. Marine Resource Management. 2 Hours.

Management of marine resources, development of legislation, and impacts of management on human resources.

MESC 635. Marine Analytical Instrumenta. 3 Hours.

Overview of the major analytical tools available to marine scientists.

MESC 636. Oceanographic Experiences. 1-3 Hour.

Participation in an oceanographic research cruise. Research project report.

MESC 670. Field Marine Science. 2 Hours.

Two-week field exercise at selected sites along the Gulf of Mexico and Atlantic shoreline of North America. Pretrip lectures and readings.

MESC 692. Seagrass Ecosystem Ecology. 2 Hours.

Ecology of seagrass systems of estuarine environments.

MESC 693. Seminar in Marine Science. 1 Hour.

Current research.

MESC 694. Directed Studies on Marine Topics. 1-6 Hour.

Research on Marine Topics.

MESC 696. Special Topics in Marine Science. 1-6 Hour.**MESC 714. Advanced Marine Ecology. 2 Hours.**

Mechanisms controlling the distribution of marine organisms. Major concepts in marine ecological theory.

MESC 716. Physiology of Marine Animals. 4 Hours.**MESC 718. Benthic Ecology. 2 Hours.**

Factors controlling life cycles of marine benthic organisms and organization of their communities.

MESC 719. Marine Microbial Ecology. 3 Hours.

Summary of the types of micro-organisms found in the marine environment and their interactions with each other and their environment.

MESC 720. Coastal Ecosystems Dynamics. 2 Hours.

Investigation of the structure and function of a variety of coastal ecosystems and evaluation of energy and nutrient processing in disparate ecosystems.

MESC 721. Marine Plankton. 3 Hours.

Taxonomy and biology of marine phytoplankton, bacterioplankton and zooplankton.

MESC 722. Chemical Oceanography. 3 Hours.

An in-depth examination of the chemistry of seawater and its relationship with biological, geological and physical processes in the oceans.

MESC 723. Geological Oceanography. 3 Hours.

Historic and current consequences of both geophysical and classic geological processes as they relate to the marine environment. Tectonic theory, sedimentary processes, stratigraphy, micropaleontology, erosion, and the formation of hydrocarbons.

MESC 725. Physical Oceanography. 3 Hours.

Physical properties of the world's oceans. Waves, tides, circulations, fluctuations and interactions of the sea with the atmosphere and landmasses.

MESC 726. Biological Oceanography. 3 Hours.

Chemical, physical and geological patterns and processes important in the interaction of organisms and the sea.

MESC 727. Fisheries Oceanography. 2 Hours.

Examination of the relationships between fish life history, recruitment dynamics and harvest potential and local-, meso-, and global-scale oceanographic processes.

MESC 729. Fisheries Techniques. 3 Hours.

Current biological and technological methodologies for studying fishes and aquatic habitats, with emphasis on study design and integration across sub-disciplines.

MESC 730. Marine Biogeochemical Process. 2 Hours.

Understanding how biogeochemical processes regulate ecosystem function in the marine environment.

MESC 731. Sediment Biochemistry. 3 Hours.

Sediment biogeochemical processes and their effects on nutrient cycles, plant production and animal distribution.

MESC 732. Ocean Variability & Global Change. 2 Hours.

Examination of large-scale, spatial and temporal variability in the earth/ocean system.

MESC 733. Marine Biogeography & Paleobiology. 3 Hours.

Overview of the time course of evolutionary changes in marine ecosystems and the role of historical factors influencing the distribution of marine organisms. Lecture and field trip.

MESC 734. Marine Resource Management. 2 Hours.

Management of marine resources, development of legislation, and impacts of management on human resources.

MESC 735. Marine Analytical Instrument. 3 Hours.

Overview of the major analytical tools available to marine scientists.

MESC 736. Oceanographic Experiences. 1-3 Hours.

Participation in an oceanographic research cruise. Research project report.

MESC 738. Marine Zoogeography. 4 Hours.**MESC 739. Oceanology of the Gulf of Mexico. 4 Hours.****MESC 741. Benthic Community Structure. 4 Hours.****MESC 743. Plankton. 4 Hours.****MESC 750. Marine Plant and Animal Interactions. 2 Hours.**

Marine Plant and Animal Interactions.

MESC 760. Marine Geophysical Processes. 3 Hours.**MESC 765. Estuarine Biology. 4 Hours.****MESC 770. Field Marine Science. 2 Hours.**

Two-week field exercise at selected sites along the Gulf of Mexico and Atlantic shorelines of North America. Pre-trip lectures and readings.

MESC 780. Marine Paleocology. 4 Hours.**MESC 792. Seagrass Ecosystems Ecology. 2 Hours.**

Ecology of seagrass systems of estuarine environments.

MESC 793. Seminar in Marine Science. 1 Hour.

Current research.

MESC 794. Directed Studies on Marine Topics. 1-6 Hours.

Research on marine topics.

MESC 795. Phytoplankton Ecology and Physiology. 2 Hours.**MESC 796. Special Topics in Marine Science. 1-6 Hours.****MG-Management Courses****MG 518. Quality Management. 3 Hours.****MG 521. Entrepreneurship. 3 Hours.****MGE-Medical Genetics Courses****MGE 520. Human Genetic Problems(M.S. Students). 3 Hours.**

Human Genetic Problems(M.S. Students).

MGE 598. Master s Level Non-Thesis Research. 1-6 Hour.**MGE 599. Thesis Research. 1-6 Hour.****MGE 600. Fatty Acid Metabolism and Genetics. 3 Hours.**

This course will cover the role of genetics, physical activity, and environment(nutrition,drugs) in determination of human diseases associated with excess fat. We will cover both rare monogenic and common multigenic-complex traits of dysfunctional fat metabolism. These mechanisms are involved in development of human diseases such as sudden infant death, cardiovascular disease, obesity, metabolic syndrome and diabetes.

MGE 620. Human Genetic Problems. 3 Hours.**MGE 698. Master s Level Non-Thesis Research. 1-6 Hour.****MGE 699. Thesis Research. 1-6 Hour.**

Prerequisites: GAC M

MGE 700. Advanced Human Genetics. 3 Hours.

Human Genetics.

MGE 701. Advanced Human Genetics. 3 Hours.

This course will cover topics related to biochemical genetics, systems biology and genetic networks, and epigenetics.

MGE 702. Advanced Human Genetics. 2 Hours.

Human Genetics.

MGE 703. Basic Statistics. 3 Hours.

To provide understanding and a working knowledge of the basic approach to the conduct of research. Specifically, the course is designed to familiarize students with data collection and management, computer analysis of data using selected statistical tests. The course will provide students with the main statistical approaches used in bio-molecular research and should enhance their ability to communicate with statisticians or editors reviewing the results of their experiments.

MGE 704. Medical Genetics Experiences for Graduate Students. 2 Hours.**MGE 705. Introduction to Medical Genetics. 2 Hours.****MGE 706. Medical Genetics-Health Professionals. 2 Hours.****MGE 707. Grant Writing. 2 Hours.**

Grant Proposal Writing.

MGE 708. Metabolism and Genetics. 3 Hours.

This course will cover the role of genetics, physical activity, and environment (nutrition, drugs) in determination of human diseases associated with excess fat. We will cover both rare monogenic and common multigenic-complex traits of dysfunctional fat metabolism. These mechanisms are involved in development of human diseases such as sudden infant death, cardiovascular disease, obesity, metabolic syndrome, and diabetes.

MGE 709. Human Genetics. 8 Hours.

The course will provide the student with in-depth knowledge of human genetics and genomics, with an emphasis on problem-solving and approaches to the study of human disease.

MGE 710. Medical Cytogenetics. 3 Hours.**MGE 715. Human Biochemical Genetics. 3 Hours.****MGE 717. Principles of Scientific Integrity. 1 Hour.****MGE 720. Human Genetic Problems(Ph.D. Students). 5 Hours.**

Human Genetic Problems(Ph.D. Students).

MGE 725. Advanced Medical Genetics. 3 Hours.

This course will focus on the medical application of advances in genetics and genomics. Topics include chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics, inborn errors of metabolism, current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics, and genomic approaches.

MGE 730. Human Molecular Genetics: A Laboratory Introductio. 3 Hours.**MGE 731. Human Molecular Genetics I. 3 Hours.****MGE 735. Human Gene Mapping. 2 Hours.****MGE 750. Chromosome Struc, Func, Dynami. 2 Hours.**

This is a comprehensive Human Cytogenetics Course, which will cover all aspects of Human Clinical Cytogenetics including: Chromosome Structure and Function,.

MGE 751. Biochemical Genetics. 2 Hours.

Inherited enzyme deficiencies in metabolic pathways are often referred to as inborn errors of metabolism or inborn metabolic disorders. Inborn metabolic disorders are individually rare diseases; however, they collectively include over 1000 distinct conditions and have a significant impact in medicine. Inborn errors include disorders involving metabolism of carbohydrates, amino acids, hemoglobin, metals, nucleotides, and fatty acids, as well as lysosomal, peroxisomal, and mitochondrial diseases. While the definition of inborn errors can be broadened to include additional conditions such as cystic fibrosis, diabetes, and even cancer, these lectures will primarily focus on inherited defects of intermediary metabolism. The scientific specialty of biochemical genetics focuses on the study, diagnosis, and treatment of inborn metabolic disorders and involves a variety of approaches, ranging from small analyte analysis to in vitro enzyme activity assays. This course will introduce students to the general concepts associated with metabolic disorders and biochemical genetics, including disorder classification, pathophysiological mechanisms, diagnostic approaches, laboratory methods, and patient care.

MGE 752. Molecular Genomics. 2 Hours.

The expansion of our knowledge on the molecular basis of human inherited disorders drives diagnostic clinical laboratories to establish innovative approaches for mutation detection, improve on existing technologies and implement novel technologies for the benefit of the patients. This course will cover the principles of numerous genetic testing methodologies in approximately the chronological order of their discovery including both targeted and high-throughput approaches. The second part of the course will be devoted to the application of molecular diagnostics mainly in the field of monogenic disorders, but will also discuss the emerging applications in the field of common disorders and pharmacogenomics.

MGE 754. Animal Model Systems. 2 Hours.

Students will learn about the use of animal models and genetic techniques for understanding genes and pathways important in human health and disease. Animal models covered will include mouse, *Drosophila*, and *C. elegans*. Techniques to be discussed will include genetic mapping of quantitative traits, generation of transgenic and knockout mice, and large-scale mutagenesis screens.

MGE 755. Systems Biology and Genetic Networks. 2 Hours.

We will consider systems biology approaches in the context of the human genome project, and with an emphasis on simple model systems. Technologies, biological concepts, and the underlying motivation for this emerging area will be discussed using examples available in the literature. The central focus of systems biology is to acquire a more global and quantitative understanding of how living organisms function as complex genetic systems, and how this might provide a more complete understanding of phenotypic traits.

MGE 756. Epigenetics. 2 Hours.

Epigenetic regulation provides an additional level of transcriptional regulation. This course will address the basic principles of Epigenetics and its involvement in many different biological processes.

MGE 780. Medical Genetics Seminar. 1 Hour.**MGE 785. Journal Club in Medical Genetics. 1 Hour.****MGE 790. Special Topics in Medical Genetics. 1-6 Hour.****MGE 798. Doctoral Level Non-Dissertation Research. 1-15 Hour.****MGE 799. Doctoral Level Dissertation Research. 1-15 Hour.**

Prerequisites: GAC D

MIC-Microbiology Courses

MIC 700. Adv Course in Autoimmunity. 3 Hours.

The objective of this course is to provide students with extensive knowledge of the genetic, cellular and molecular basis of autoimmunity. The course will focus on specific autoimmune diseases to illustrate how deregulation of key pathways of innate and adaptive immunity can lead to the breakage of immune tolerance and the development of autoimmune disease. Lectures will detail cellular and molecular immune mechanisms that affect specific pathologies. Students will learn how the use of experimental mouse models and genetics have led to current concepts of human disease susceptibility and autoimmune pathogenesis. Basic principles of innate and adaptive immunoregulation will be applied to understanding autoimmune pathophysiology. Finally, existing and potential therapeutic approaches to the treatment of autoimmune diseases and their relationship to pathophysiological relevant components of innate and adaptive immunoregulation will be discussed. The format of the course is divided into faculty lectures, student presentations and in-class discussions.

MIC 701. Inflammation Journal Club. 1 Hour.**MIC 709. Topics in Profession Dev. 3 Hours.**

This course is designed to give students a broader awareness of issues critical to professional development. Topics to be discussed include issues of grant preparation, manuscript preparation, oral and poster presentations, scientific review, and professional comportment.

MIC 710. Development of Communication Skills for Biological. 1-2 Hour.**MIC 711. Escherichia coli and Salmonella:cell and mol biology. 3 Hours.**

Escherichia coli and Salmonella:cell and mol biology.

MIC 712. Physiology and Pathogenicity of Mycobacteria. 1 Hour.

This journal club will focus on the molecular mechanisms of important physiological processes and host-pathogen interaction of mycobacteria, in particular of *Mycobacterium tuberculosis*. The students will gain insight in the latest developments in the field and will also learn how to present and discuss scientific publications. Special emphasis will be on the critical discussion of the published data.

MIC 713. Advanced Topics in Virology. 3 Hours.

The upper-level graduate school course, Advanced Topics in Virology, is intended to provide students with in-depth knowledge on topics related to advanced virology. For the spring semester 2010, this course will focus on virus-host interactions. Topics to be discussed will include: host factors that affect viral replication, viral regulation of host processes, RNA interference, adaptive and innate immunity, mechanisms of pathogenesis, and co-evolution of viruses with their hosts. Class will consist of both faculty lectures and student presentations, which will emphasize information obtained from the primary literature and understanding the experimental approaches used to study these interactions. Grades will be based on oral presentations, class participation and written exercises.

MIC 718. Respiratory Tract Pathogens. 3 Hours.

This course will examine major bacterial and fungal pathogens that infect the respiratory tract in humans, each using different mechanisms in attempts to avoid host defenses. Classes will consist of an introduction to each topic provided by the faculty preceptor followed by critical analysis of primary literature in the form of presentations by individual students.

MIC 724. Virology Journal Club. 1 Hour.

Virology Journal Club.

MIC 725. Char Of Biol Macromol Using Analytical Ultracentrifugati. 3 Hours.**MIC 730. Epidem for the Lab Sci. 3 Hours.****MIC 733. Adv Course in Immunology and Leukocyte TraffickingIm. 3 Hours.**

Adv Course in Immunology and Leukocyte TraffickingIm.

MIC 734. Microbiology Lab Rotations. 5 Hours.**MIC 737. Mucosal Immunology Journal Club. 1 Hour.****MIC 740. Protective/Pathogen T Cell Res. 3 Hours.**

The objective of this class is to provide students with detailed information regarding the complexity and diversity of T cell responses, and their beneficial and detrimental effects. Topics that may be covered include: T cell selection and ontogeny; the maintenance of naïve T cells; generation of effector cells; T cell memory; immunopathogenesis and infection; vaccination; the role of innate immunity in directing T cell responses; T cell help; regulatory T cell subsets; autoimmunity; Th1 vs. Th2 vs Th17 cells; T cell responses and inflammation. The format of the class will primarily be based upon student presentations of scientific manuscripts and class discussions.

MIC 741. Topics in Professional Develop. 2 Hours.

The scientific enterprise is an increasingly competitive endeavor. This course will provide graduate students and post-doctoral fellows with the opportunity to enhance their skills in statistics, oral and written presentations, university-level teaching, grant writing, professionalism, and career development. The course includes a seminar series, didactic lectures, and oral and written presentations.

MIC 743. Post-Trns Mech Adv Course. 3 Hours.**MIC 745. Micro for dental students. 5 Hours.****MIC 750. Innate Immunity Advanced Course. 3 Hours.**

Experimental Microbial Pathogenesis.

MIC 751. Pathogenesis of Gram-Pos Bact.. 3 Hours.

This course will cover several major Gram-Positive Pathogens, including *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Staphylococcus aureus*, and Group B *Streptococci*. Based on class interest other gram-positive pathogens may be included. The format of the course will be presentation of pre-selected papers by students with discussion. The grade will be based on students' presentations and participation in discussions.

MIC 753. Practical Application of Sequence Analysis Softwar. 3 Hours.**MIC 756. Topics in Prokaryotic Biology. 3 Hours.**

Advanced Virology.

MIC 757. Protein Folding and Association Adv Course. 3 Hours.

Annual Review of Immunology Advanced Course.

MIC 758. Topics in Prokaryotic Biology Adv. Course. 3 Hours.

Topics in Prokaryotic Biology Adv. Course.

MIC 759. Adv Post-Trans Reg Mech. 3 Hours.

The Post-Transcriptional Regulatory Mechanisms advanced course examines different aspects of gene regulation with an emphasis on mRNA processing, localization and turnover mechanisms, protein localization and turnover mechanisms, and various aspects of translational control (including siRNA and miRNA). An emphasis will be placed on reading papers that utilize a wide range of experimental approaches to study these processes. Grades will be based on oral presentations, class participation, a grant proposal, and participation in a study section held at the end of the course. Preq: None.

MIC 760. Autoimmunity Journal Club. 1 Hour.

The purpose of this Journal Club is to provide a weekly forum for Students to present and discuss the latest research related to the cellular and molecular basis of autoimmunity and autoimmune disease. The topics of papers will include the roles of specific immunoregulatory cell-types and molecular mediators in immune tolerance and autoimmune disease. The latest basic science and clinical applications will be presented, including studies in animal models and their relevance to human autoimmune diseases.

MIC 770. RNA Viruses Journal Club. 1-2 Hour.**MIC 771. RNA Silencing (RNAi) Jrnl Club. 1 Hour.**

Virus Structure Journal Club.

MIC 772. Bacterial Pathogenesis Journal Club. 1 Hour.**MIC 773. Parasitology Journal Club. 1 Hour.****MIC 774. Hybrid Str Tech Cell/Mole BY. 3 Hours.**

This course provides an introduction to structural biology with focus on X-ray crystallography, Cryo-Electron microscopy and Image Reconstruction, NMR, and Mass Spectrometry as applied to biological systems. Each component will be taught separately by Drs. Walter, Dokland, Saad, and Prevelige, respectively, and will concentrate on providing the student with a basic understanding of the essential principles of the technique as well as its practical applications. Examples will generally be drawn from virology and immunology. Students will be actively involved through assigned problem sets and in-class discussion.

MIC 775. Structural Basis of Viral Repl. 3 Hours.

This course will focus on understanding the mechanistic basis of viral replication through the lens structural biology. The course will cover mechanisms of viral entry, transcription, translation, genome replication, transport, assembly, and exit as well as immune evasion. The focus will be on systems where a particular step in the replication cycle is well understood rather than on any particular virus family. Students will be expected to have a basic knowledge of virology and acquire sufficient knowledge of the techniques of structural biology to critically analyze primary literature.

MIC 777. Biol Neurodev Disorders/Ln/Mem. 3 Hours.

Investigation into disorders of the nervous system that begin during fetal development, infancy and/or childhood. Topics covered will include: autism, epilepsy, learning and memory. The course will consist of faculty lectures from basic and clinical investigators, student presentations and clinical observations of testing, evaluation and diagnosis of developmental disorders in children.

MIC 778. Primary Immune Deficiencies. 3 Hours.

This course will focus on the major classes of human primary immunodeficiency disorders to reveal fundamental mechanisms of normal immune responsiveness in humans. The course will cover inherited defects of both innate and immune system function, including adhesion and chemotactic defects, myeloid cell differentiation and function defects, defects of activation and regulatory complement proteins, disturbed cytolytic function in NK and CD8 T cells, impaired development of antigen-specific receptors, severe combined immunodeficiency syndromes, disorders of B and T cell development, and disturbed antigen presenting cell function. Readings will include both studies of the diseases as manifested in human patients and in animal models. Classes will consist of an introduction to each topic followed by critical analysis of primary literature.

MIC 780. Research Experience for Medical Students. 5 Hours.

Selected Readings in Molecular Cell Biology.

MIC 782. Post-Transcriptional Regulatory Mechanisms. 3 Hours.

This course will focus on theoretical and practical aspects of protein folding and assembly and will draw heavily from current literature as well as seminal papers. Topics to be covered will be determined by student interest but may include: protein folding & stability, kinetics and thermodynamics of protein folding and assembly, the nature of protein folding intermediates, the design and stabilization of folded proteins, protein aggregation in vitro, protein mis-folding diseases, chaperones, natively unfolded proteins and computational approaches to protein folding. The techniques used to study protein folding and association will also be covered. Approximately 40% of the class will focus on the control of biological assembly by examining biological recognition processes, controlled conformational switching, kinetics and thermodynamics of assembly and polymerization.

MIC 785. Biology of Parasitism Discussion Group. 1 Hour.

The Post-Transcriptional Regulatory Mechanisms examines different aspects of gene regulation with an emphasis on mRNA processing, localization and turnover mechanisms, protein localization and turnover mechanisms, and various aspects of translational control (including siRNA and miRNA). An emphasis will be placed on reading papers that utilize a wide range of experimental approaches to study these processes. Grades will be based on oral presentations, class participation.

MIC 786. Retrovirology Journal Club. 1 Hour.**MIC 787. Mucosal Immunology Adv Crse. 3 Hours.**

Mucosal Immunology - Advanced Course.

MIC 789. Structural Immunology Journal Club. 1 Hour.**MIC 791. Advanced Topics in Virology. 3 Hours.**

The upper-level graduate school course, Advanced Topics in Virology, is intended to provide students with in-depth knowledge on topics related to advanced virology. For the spring semester 2010, this course will focus on virus-host interactions. Topics to be discussed will include: host factors that affect viral replication, viral regulation of host processes, RNA interference, adaptive and innate immunity, mechanisms of pathogenesis, and co-evolution of viruses with their hosts. Class will consist of both faculty lectures and student presentations, which will emphasize information obtained from the primary literature and understanding the experimental approaches used to study these interactions. Grades will be based on oral presentations, class participation and written exercises.

MIC 794. Structural Virology Jrnl Club. 1 Hour.

Protein Targeting Journal Club.

MIC 796. Neuroimmunology Jrnl Club. 1 Hour.

Complement Journal Review.

MIC 797. Cellular and Molecular Immunology Journal Club. 1 Hour.**MIC 798. Non-Dissertation Research in Molecular Cell Biolog. 1-15 Hour.****MIC 799. Dissertation Research in Molecular Cell Biology. 1-15 Hour.**

Prerequisites: GAC D

MK-Marketing Courses

MK 520. Sales Management. 3 Hours.

Management of personal sales force including recruiting, selecting, training, compensating and evaluating sales personnel; planning, implementing and controlling selling strategies. Preq: MBA 650. 3 credit hours.

MK 521. Entrepreneurship and Marketing Planning. 3 Hours.

Deals with the starting, managing and nurturing a new business venture. Emphasis on development of marketing/ business plans including market/ industry/competitor analysis. Project based course.

MK 530. Industrial Distribution Operations. 3 Hours.

Concepts of value added, profitability, inventory management, scheduling, decision support systems, facilities, and warehouse operations integrated with financial control of distributor operations. Case studies and industrial speakers.

MK 535. Industrial Distribution Policies and Quality Issues. 3 Hours.

Cases incorporating current approaches and procedures for attaining optimum manufacturer/distributor/customer relationships. Methods for planning, implementing, and controlling distribution strategies. Market demand analysis, profitability and multi-branch operations, quality assurance, TQM concepts, and forecasting. Pre- or coreq: MK 530.

Prerequisites: MK 530 [Min Grade: C](Can be taken Concurrently)

MK 540. Small Business Consulting and Research. 3 Hours.

Applied field work integrating functional business fields of management, finance, accounting, marketing, economics, production policy, and decision making related to small business enterprises.

MPA-Master of Public Admin Courses

MPA 600. Administrative Ethics. 3 Hours.

Theories and principles of ethics. Understanding ethical issues and use of ethical principles in resolving ethical dilemma in public organizations.

MPA 601. The Public Policymaking Process. 3 Hours.

Public Policy as a decision-making process. Examines environmental and organizational factors, the choice of alternatives, and the implementation and evaluation of public policy, with applied references to specific functional areas e.g. housing, pollution, energy and transportation.

MPA 602. Administrative Theory and Behavior. 3 Hours.

Theories of organization, management and administration. Examines both institutional and behavioral Survey of Public Administration. Explores differences between public and private sector organizations. Examines both institutional and behavioral elements as they apply to public agencies. Covers topics such as budgeting, personnel, ethics, federalism and other fundamentals of public administration.

MPA 603. Public & Nonprofit Budgeting. 3 Hours.

Examines the institutions, principles and techniques of governmental budgeting, including the practices and fundamental concepts of public budgeting, the budgeting process and financial management.

MPA 604. Human Resources Management. 3 Hours.

Examines the major concepts, theories, procedures and themes needed for effective management of human resources in the public and nonprofit sectors. Emphasis is on the urban and sub-national settings. Topics may include merit and civil service systems, organized public labor, recruitment, classification, performance appraisal, disciplinary and grievance procedures, training and staff development, diversity and anti-discrimination policy and strategies, ethics/morality and personnel law.

MPA 605. Information Technology in the Public Sector. 3 Hours.

Theory and applications of information management, technology applications and policy. Focus is on social, organizational, political and constitutional impacts of information today. Emphasizes policy and applications related to building knowledge economy, E-Government applications and Geographic Information Systems.

MPA 606. Foundations of PA Research. 3 Hours.

An introduction to research methodology presenting quasi-experimental and experimental research designs, exposition of qualitative and basic survey methods, and basic data analysis.

MPA 607. Quantitative Methods for PA. 3 Hours.

Using a pragmatic and applied approach, this course introduces statistical techniques used to analyze data in the social sciences including simple and multiple regression and nonlinear models. Pre-requisite MPA 606.

Prerequisites: MPA 606 [Min Grade: C]

MPA 662. State and Local Government Administration. 3 Hours.

This course is designed to introduce students to the study of state and local government administration. Introduces key concepts related to state and local government political structures and institutions; regional, state and county economic performance and state/local government finance.

MPA 664. Women in Public Administration. 3 Hours.

Studies in the leadership of women in public service. Focus on theoretical and professional development of women in government and nonprofit administration.

MPA 665. Crisis Management. 3 Hours.

Management and coordination of institutions to respond, plan, and mitigate crises. Focus on the role of managers in managing short and long term crises.

MPA 666. City County Management. 3 Hours.

Study of the typical nature of local government and the importance of local-state-federal relations, regional cooperation, and the nonprofit and public-private partnership in providing local government services.

MPA 667. Administrative Law. 3 Hours.

Explanation of law in society and the legal setting of public administration. Examination of substantive areas of the study of law including regulatory process, administrative adjudication, the administrative procedures acts, administrative due process, judicial review, liability and citizen's rights.

MPA 668. Intergovernmental Relations. 3 Hours.

The various relations among governments in the U.S. system. Focus on understanding the interactions, attitudes, and behavior of elected officials and bureaucrats of two or more units of government functioning in their public capacities.

MPA 671. Special Topics in Public Management. 3 Hours.

The use of marketing and fundraising strategies for nonprofits. Incorporates both theory and practice as students learn the fundamentals of marketing and resource development and apply them to hands-on projects in local nonprofit agencies.

MPA 672. Nonprofit Management. 3 Hours.

The day-to-day challenges faced by managers of nonprofit agencies, including the challenge of fund raising, balancing competing values as related to efficiency, effectiveness and equity.

MPA 673. Community Planning and Organization. 3 Hours.

Examines various aspects of nonprofit health organizations including history of these agencies, sources of revenue, fund raising and marketing practices, accomplishments and achievements, criticisms and controversies, and the role of volunteer leadership.

MPA 674. GIS for Managers. 3 Hours.

Examines the use of Geographic Information Systems (GIS) using GIS software. It integrates theory and socioeconomic applications of GIS in the public and nonprofit sector.

MPA 675. Equity and Diversity in Public Policy. 3 Hours.

Examines equity and diversity as concepts that affect both the internal dynamics of the public workplace as well the external effect on citizens as public administrators create policies and programs. The course addresses issues of cultural competency and teaches public administrators to recognize and understand equity issues that may arise based on diversity of race, gender, ethnicity, age, physical ability, religion, and sexual preference in the creation of public policies and programs in order to ensure that illegal forms of discrimination are minimized.

MPA 678. Strategic Planning. 3 Hours.

Presents the strategic planning process as it is utilized in contemporary settings. Focuses on how the strategic planning process is applied in the public and nonprofit sectors.

MPA 681. Local Government Planning. 3 Hours.

This course examines the historical roots of modern land use planning and explores contemporary issues in planning such as sprawl and smart growth.

MPA 682. Economic Development. 3 Hours.

The course is devoted to understanding economic development practices in the United States. It focuses on how market forces combine with non-economic variables to influence the economic development process. Theories and case studies drawn from various disciplines, particularly economics and public finance, will be used to understand the economic development process.

MPA 683. Public Managerial Economics. 3 Hours.

Application of microeconomic theory to real life problems faced by managers. Emphasis on understanding the complex real life social and economic challenges using economic principles and applying economic decision criteria in solving problems.

MPA 684. Grants Management. 3 Hours.

Covers the essentials of grant-writing and the management of grants.

MPA 685. Special Topics in Public Administration. 3 Hours.

Special topics seminar based on the research and substantive interests of the MPA faculty and students.

MPA 689. Program Evaluation. 3 Hours.

Analytic tools for evaluating public and nonprofit programs and services.

MPA 690. Seminar in Public Services Issues. 3 Hours.

Examines starting and maintaining a faith-based service organization (FBSO). Topics include role of faith/spirituality, mission, governance, setting, staffing, funding, church/FBSO issues, state/federal involvement, cooperative ventures with other FBSOs, networking.

MPA 695. Special Topics in Public Administration. 3 Hours.

Explores special topics in public administration.

MPA 696. Independent Study in Public Administration. 1-3 Hour.

One-on-one learning experience between student and an instructor. Permission of Program Director required.

MPA 697. Grad Res Paper or Portfolio Mt. 3 Hours.

Graduation Research Paper - Capstone project. Permission of MPA Director required.

MPA 698. Internship in Public Administration. 3 Hours.

Supervised field placement in government or a nonprofit agency for directed work experience arranged by the internship coordinator and as per the guidelines in the internship manual. Permission of MPA director required.

MPA 699. Thesis Research. 3-6 Hours.

Research and writing of thesis. Permission of MPA Director required.

Prerequisites: GAC M

MS-Military Science Courses

MSE-Material Science Egr Courses

MSE 501. Materials Processing. 3 Hours.

Processing of metals, glasses, ceramics, and composites. Powder, casting, welding, rapid solidification, and other advanced approaches.

MSE 502. Frontiers of Materials. 3 Hours.

Recent advances in materials technology and application. Novel processing, structures, properties, and performance issues.

MSE 505. Frontiers of Automotive Materials. 3 Hours.

Advanced lightweight automotive materials, manufacturing and modeling techniques. Technology advancements in cost-effective carbon, glass and related reinforcements; "green" and sustainable materials, crashworthiness and injury protection of occupants and pedestrians, metal castings, heavy truck, mass transit, fuel cell and hybrid vehicles. Students taking this class will receive a GATE certificate of training in automotive materials technologies upon successful completion.

MSE 507. Interpretation of Microstructure. 3 Hours.

Interpretation of metal and ceramic microstructures with respect to their general type and origin and their relationship to their composition, type of phase diagram, processing, and the driving forces and kinetics of their evolution. The student will learn to identify the prior processing of a material and design means for modification to produce alternate structures. MSE 381 is recommended.

MSE 508. Nanomaterials. 3 Hours.

The emphasis of this course will be to introduce the basic tools of nanotechnology, building blocks of nanostructured materials, the behavior of materials with nanoscale structures and their technological applications, including automotive, medical, and electronic, etc. MSE 280 is recommended.

MSE 509. Principles of Metal Casting. 3 Hours.

Production and evaluation of cast ferrous metals (gray iron, ductile iron, steel) and non-ferrous metals (brass, bronze, aluminum). Design of castings and molds. Laboratory on the gating, risering and molten metal treatment, analysis and handling techniques required to produce high quality castings.

MSE 509L. Principles of Metal Casting. 0 Hours.

Production and evaluation of cast ferrous metals (gray iron, ductile iron, steel) and non-ferrous metals (brass, bronze, aluminum). Design of castings and molds. Laboratory on the gating, risering and molten metal treatment, analysis and handling techniques required to produce high quality castings.

MSE 513. Composite Materials. 3 Hours.

Processing, structure, and properties of metal-, ceramic-, and polymer-matrix composite materials. Roles of interfacial bond strength, reinforcement type and orientation and matrix selection in physical and mechanical properties of composite materials.

MSE 530. Polymeric Materials. 3 Hours.

Processing methods, structure/engineering/property relationships, and applications of polymeric materials.

MSE 530L. Polymeric Materials Lab. 0 Hours.

Introduction to polymeric chemistry laboratory.

MSE 533. Nondestructive Evaluation of Materials. 3 Hours.

Principles, applications, and limitations of ultrasonic vibrations, acoustic emission, radiographic, magnetic particle, eddy current, and other nondestructive testing methods. Intelligent sensors and health monitoring of real structures.

MSE 564. Metals and Alloys. 3 Hours.

Microstructures, properties, heat treatment, and processing of ferrous and nonferrous materials.

MSE 564L. Metals and Alloys Lab. 0 Hours.

Laboratory component of MSE 564 and must be taken concurrently.

MSE 565. Characterization of Materials. 4 Hours.

Theory and practice of materials characterization, with emphasis on optical metallography, quantitative metallography, scanning electron microscopy, crystallography, and x-ray diffraction. Specific application in metals and ceramics considered.

MSE 565L. Characterization of Materials Laboratory. 0 Hours.

Laboratory component for Characterization of Materials.

MSE 570. Ceramic Materials. 3 Hours.

Structure, processing, properties, and uses of ceramic compounds and glasses. Mechanical, thermal, and electrical behavior of ceramic materials in terms of microstructure and processing variables.

MSE 584. Electronic, Magnetic and Thermal Properties of Materials. 3 Hours.

Fundamentals of electron band structure, mechanisms behind rectifying junctions, transistors, and other electronic devices. Magnetic and thermal properties of materials.

MSE 590. Special Topics in (Area). 1-6 Hour.

Special Topics in Area.

MSE 601. Materials Science and Engineering Seminar. 1 Hour.

Required of all full-time masters students.

MSE 603. Thermodynamics of Materials. 3 Hours.

Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems.

MSE 613. Mechanical Behavior of Materials. 3 Hours.

Microstructural effects on the deformation mechanisms responsible for mechanical behavior of engineering materials.

MSE 614. Process Quality Engineering. 3 Hours.

Application of the concepts and tools of total quality to develop, implement, and maintain an effective quality assurance system in a materials processing and manufacturing environment. Students will be exposed to probability models, statistical tools, linear and multiple regression, DOE, TQM and six sigma.

MSE 615. Nucleation and Growth. 3 Hours.

Nucleation, growth and phase transformations in materials. The roles of heterogeneities, boundaries, temperature and free energy are addressed.

MSE 616. Microstructural Processes. 3 Hours.

Theory and application of the principal microstructural processes in materials, including recrystallization, grain growth, coarsening, and sintering.

MSE 623. Solidification. 3 Hours.

Planefront, cellular, and dendritic growth of single and polyphase alloys as applied to normal and directional solidification. Influence of epitaxy and convection on solidification structures.

MSE 630. Soft Materials: Synthesis, Characterization and Applications. 3 Hours.

This course deals with the synthesis and characterization of high molecular weight polymers using a range of polymerization reactions. Polymerization techniques will include addition, condensation and copolymerization. The associated kinetic and mechanistic studies will be presented. Characterization of solution properties, molecular weight and molecular structure will also be covered.

MSE 631. Polymer Structure and Morphology. 3 Hours.

Application of x-ray and electron diffraction, light, electron and atomic force microscopy to crystal structure and morphology of polymers. Morphology-processing-property relationships, deformation mechanisms and orientation characterization.

MSE 632. Polymer Processing. 3 Hours.

Introduction to polymer processing. Design and analysis of plastic products and processes based on knowledge of the composition and physical and rheological behavior of the polymers. Product properties will be correlated with processing-induced morphology.

MSE 633. Adv Mech of Deformation. 3 Hours.

Basics and intermediate mechanics of deflection of beams and columns, mechanics of impact, failure theories, plastic deformation of materials, fracture mechanics, fatigue, creep and vibration. The topics will be supported by industry relevant case studies. Suggested prerequisites included Mechanics of Solids (CE 220) and Mechanical Behavior (MSE 382).

MSE 634. Design/Manf Tech for Automotive Applications. 3 Hours.

Basics of lightweight materials, avenues on automotive component designs, emerging processing technologies in lost foam casting, thermoplastic composites and testing methodologies.

MSE 635. Advanced Mechanics of Composites. 3 Hours.

Classical lamination theory, analysis and failure of reinforced composite material systems, anisotropic elasticity, stress analysis and design of laminated composites including 3D effects, stress concentrations, free-edge effects, hygrothermal behavior, adhesive and mechanical connections.

MSE 636. Engineering Fibers. 3 Hours.

Processing-microstructure-properties of different fibrous materials: natural polymeric fibers (jute, sisal, silk, etc.), synthetic polymeric fibers (aramid and polyethylene, etc.), metallic fibers, and high performance ceramic fibers (alumina and silicon carbide). Application of Weibull statistics to strength of fibrous materials, techniques of mechanical testing of fibers and applications of fibers in various fields.

MSE 637. Quantitative Microscopy. 3 Hours.

Quantitative description of microstructural features. Relationships between microstructural characteristics and properties.

MSE 643. Scanning Electron Microscopy. 3 Hours.

Characterization of materials using scanning electron microscopy. Microscope construction and operation, interaction of electrons and signal production, imaging, and x-ray spectroscopy addressed.

MSE 643L. Scanning Electron Microscopy Laboratory. 0 Hours.

Laboratory component of Scanning Electron Microscopy course.

MSE 644. Crystallography and X-Ray Diffraction. 3 Hours.

Characterization of materials using diffraction. Crystallographic descriptions and databases, diffraction theory, X-ray diffractometer construction and operation, and experimental techniques are addressed. Comparisons of diffraction techniques are made.

Prerequisites: (MSE 643 [Min Grade: C] or MSE 743 [Min Grade: C])

MSE 644L. Crystallography and X-Ray Diffraction Laboratory. 0 Hours.

Laboratory component of Crystallography and X-Ray Diffraction course.

MSE 653. Phase Diagrams. 3 Hours.

Analysis and interpretation of binary, ternary, and more complex phase diagrams including thermodynamic basis and construction.

MSE 667. Process Modeling/Simulation for Lightweight Mtls. 3 Hours.

Theory and practice of analytical methods and computational modeling for manufacturing processes of metals, ceramics, polymers and composites. Applications on processes such as metal cutting, welding, casting, massive forming, solidification, rapid prototyping, injection molding and resin transfer molding.

MSE 668. Applied Finite Element Analysis. 3 Hours.

Finite Element Analysis (FEA) is used widely for design optimization and failure prediction in automobile, energy, aerospace, and other industries. This course primarily looks at how practically to set up static structural models and get meaningful results. The focus will be on applying loading and boundary conditions, good meshes, convergence of results, and correct interpretation of results. Students will learn how to set up models using programs such as Pro/Engineer and ANSYS.

MSE 690. Special Topics In (Area). 1-6 Hour.

Special Topics in (Area).

MSE 691. Individual Study in (Area). 1-6 Hour.

Individual Study in (Area).

MSE 698. Non-Thesis Research. 1-12 Hour.

Non-Thesis Research.

MSE 699. Thesis Research. 1-12 Hour.

Prerequisites: GAC M

MSE 701. Materials Science and Engineering Seminar. 1 Hour.
Materials Science and Engineering Seminar. Required of all full-time doctoral students.

MSE 703. Thermodynamics of Materials. 3 Hours.
Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems.

MSE 713. Mechanical Behavior of Materials. 3 Hours.
Microstructural effects on deformation mechanisms responsible for mechanical behavior of engineering materials.

MSE 714. Process Quality Engineering. 3 Hours.
Application of the concepts and tools of total quality to develop, implement, and maintain an effective quality assurance system in a materials processing and manufacturing environment. Students will be exposed to probability models, statistical tools, linear and multiple regression, DOE, TQM and six sigma.

MSE 715. Nucleation and Growth. 3 Hours.
Nucleation, growth and phase transformations in materials. The roles of heterogeneities, boundaries, temperature and free energy are addressed.

MSE 716. Microstructural Processes. 3 Hours.
Theory and application of the principal microstructural processes in materials, including recrystallization, grain growth, coarsening, and sintering.

MSE 723. Solidification. 3 Hours.
Planefront, cellular, and dendritic growth of single and polyphase alloys as applied to normal and directional solidification. Influence of epitaxy and convection on solidification structures.

MSE 730. Soft Materials: Synthesis, Characterization and Applications. 3 Hours.
This course deals with the synthesis and characterization of high molecular weight polymers using a range of polymerization reactions. Polymerization techniques will include addition, condensation and copolymerization. The associated kinetic and mechanistic studies will be presented. Characterization of solution properties, molecular weight and molecular structure will also be covered.

MSE 731. Polymer Structure and Morphology. 3 Hours.
Application of x-ray and electron diffraction, light, electron and atomic force microscopy to crystal structure and morphology of polymers. Morphology-processing-property relationships, deformation mechanisms and orientation characterization.

MSE 732. Polymer Processing. 3 Hours.
Introduction to polymer processing. Design and analysis of plastic products and processes based on knowledge of the composition and physical and rheological behavior of the polymers. Product properties will be correlated with processing-induced morphology.

MSE 733. Adv Mech of Deformation. 3 Hours.
Basics and intermediate mechanics of deflection of beams and columns, mechanics of impact, failure theories, plastic deformation of materials, fracture mechanics, fatigue, creep and vibration. The topics will be supported by industry relevant case studies. Suggested prerequisites included Mechanics of Solids (CE 220) and Mechanical Behavior (MSE 382).

MSE 734. Design/Manf Tech for Automotive Applications. 3 Hours.
Basics of lightweight materials, avenues on automotive component designs, emerging processing technologies in lost foam casting, thermoplastic composites and testing methodologies.

MSE 735. Advanced Mechanics of Composites. 3 Hours.
Classical lamination theory, analysis and failure of reinforced composite material systems, anisotropic elasticity, stress analysis and design of laminated composites including 3D effects, stress concentrations, free-edge effects, hygrothermal behavior, adhesive and mechanical connections.

MSE 736. Engineering Fibers. 3 Hours.
Processing-microstructure-properties of different fibrous materials: natural polymeric fibers (jute, sisal, silk, etc.) synthetic polymeric fibers (aramid and polyethylene, etc.), metallic fibers, and high performance ceramic fibers (alumina and silicon carbide). Application of Weibull statistics to strength of fibrous materials, techniques of mechanical testing of fibers and applications of fibers in various fields.

MSE 737. Quantitative Microscopy. 3 Hours.
Quantitative description of microstructural features. Relationships between microstructural characteristics and properties.

MSE 743. Scanning Electron Microscopy. 3 Hours.
Characterization of materials using scanning electron microscopy. Microscope construction and operation, interaction of electrons and signal production, imaging, and x-ray spectroscopy addressed.

MSE 743L. Scanning Electron Microscopy Laboratory. 0 Hours.
Laboratory component for Scanning Electron Microscopy course.

MSE 744. Crystallography and X-Ray Diffraction. 3 Hours.
Characterization of materials using diffraction. Crystallographic descriptions and databases, diffraction theory, X-ray diffractometer construction and operation, and experimental techniques are addressed. Comparisons of diffraction techniques are made.

Prerequisites: (MSE 643 [Min Grade: C] or MSE 743 [Min Grade: C])

MSE 744L. Crystallography and X-Ray Diffraction Laboratory. 0 Hours.
Laboratory component for Crystallography and X-Ray Diffraction course.

MSE 753. Phase Diagrams. 3 Hours.
Analysis and interpretation of binary, ternary, and more complex phase diagrams including thermodynamic basis and construction.

MSE 767. Process Modeling/Simulation for Lightweight Mtls. 3 Hours.
Theory and practice of analytical methods and computation modeling for manufacturing processes of metals, ceramics, polymers and composites. Applications on processes such as metal cutting, welding, casting, massive forming, solidification, rapid prototyping, injection molding, and resin transfer molding.

MSE 768. Applied Finite Element Analysis. 3 Hours.
Finite Element Analysis (FEA) is used widely for design optimization and failure prediction in automobile, energy, aerospace, and other industries. This course primarily looks at how practically to set up static structural models and get meaningful results. The focus will be on applying loading and boundary conditions, good meshes, convergence of results, and correct interpretation of results. Students will learn how to set up models using programs such as Pro/Engineer and ANSYS.

MSE 790. Special Topics in (Area). 1-6 Hour.
Special Topics In (Area).

MSE 791. Individual Study in (Area). 1-6 Hour.
Individual Study in (Area).

MSE 798. Non-Dissertation Research. 1-12 Hour.

MSE 799. Dissertation Research. 1-12 Hour.
Prerequisites: GAC D

MSTP-Med Science Training Prog Courses

MSTP 794. Translational Research Seminar. 1 Hour.

This course will consist of a series of seminars on the broad topic of Translational Research. The seminars are designed to review different specific areas of Translational Research in a "case study" approach. Invited speakers will choose a "case" of a particular scientific concept or candidate drug that is being developed or has been translated into an approved therapy with clinical impact. The speaker will attempt to highlight the milestones along the developmental pathway, including their own contributions, but focus on the overall development of the field over a significant period of time. An appreciation for the key elements that determine success in translating basic biomedical understanding into medical practice, include a combination of science, financial, and often political issues, that are often only clearly apparent in hindsight. By understanding the specifics of a number of different actual cases of successful completion of translational projects, students will become more aware of the issues in translational research beyond the specific scientific facts. Open only to MD/PhD Students.

MSTP 795. Continuing Clinical Education. 1 Hour.

This course will consist of three components. The first will be interactions with a Physical Diagnosis Mentor to maintain History and Physical Diagnosis skills learned in the MS1 and MS2 years. The second will be interactions with a Clinical Specialty Mentor to increase exposure to various medical specialties and give advice for MD/PhD students to help guide their future residency choices. The third will be a translational medicine journal club in conjunction with the Internal Medicine ABIM Research Pathway Residents and Fellows.

MSTP 796. Anatomy Lab TA Opportunity. 1 Hour.

From 23 TOTAL dissections between the MS1 and MS2 years, students choose any 6 dissections to teach depending on their availability. Course receives 2 weeks of elective credit. Overview: MS4 students will serve as Anatomy Teaching Associates for MS1 and MS2 students during scheduled lab times to make preclinical training more robust and clinically relevant. Course benefits for MS4 students: - Small-group anatomy training aimed to improve knowledge of anatomy & dissection skills. - Teaching & mentoring experience of students with less clinical experience. - Flexible schedule: Preferred dissections may be changed up to 1 week before the preclinical scheduled lab time. Format: - Students will attend a 1-hour orientation session addressing effective teaching techniques on August 19th at 3:00p. (accommodation for absence can be made on a case-by-case basis). - The week prior to their chosen dissections, students will receive 2 hours of small group training in SOM lab under the directions of trained UAB Anatomist and Course Director Dr. Resuehr. During this training, students will perform the relevant cadaveric dissection which will be saved for demonstration during the preclinical lab. - Tas will be assigned to a group of preclinical students during their scheduled lab time to help answer questions. Particular emphasis will be placed on providing preclinical students with clinical correlates. Learning Objectives: - Dissect and identify all associated structures of their chosen dissections emphasizing the relation of structures to each other and common pathologies. - Understand common anatomical variations (if applicable). - Understand anatomically relevant information pertaining to clinical procedures. - Understand geriatric changes. - Mentor and teach students with less experience.

MSTP 798. MSTP Non-Dissertation Hours. 1-8 Hour.

Laboratory research pre-qualification. Only open to MSTP students.

MSTP 799. MSTP Dissertation Hours. 1-8 Hour.

Dissertation research. Only open to MSTP students.

MT-Medical Technology Courses

MU-Music Courses

MU 510. Music Technology Workshop. 1-3 Hour.

MU 521. Foundations of Graduate Study in Music. 3 Hours.

Examines the history and contemporary philosophy of music education in the public schools.

MU 529. Choral Tech and Materials. 3 Hours.

Advanced study of the techniques of choral conducting including appropriate gestures, score study, performance practice, choral diction, voice building for choirs, literature selection, rehearsal techniques and working with various types of instrumental accompaniment.

MU 530. Methods of Instrumental Music. 3 Hours.

A study of the instrumental music environment, with an emphasis on administrative topics, materials and literature.

MU 545. Modal Counterpoint. 3 Hours.

Important characteristics of vocal polyphonic writing based on modal scales with emphasis on style of Palestrina and other Renaissance composers.

MU 548. Orchestration. 3 Hours.

Scoring techniques for orchestra, band, and other instrumental groups.

MU 551. Topics in Music Theory. 3 Hours.

Aspects of music theory and analysis. May be repeated for credit.

Prerequisites: MU 322 [Min Grade: C] and MU 325 [Min Grade: C]

MU 555. Form and Analysis. 3 Hours.

Principles and techniques of organization in tonal music; analytical methods.

MU 558. Contemporary Techniques. 3 Hours.

Techniques and materials employed in contemporary music, including nonfunctional and nontertian harmony, polyharmony, atonal and serial music, microtones, sound-mass composition, and contemporary notation.

MU 561. Music Literature Seminar. 3 Hours.

Selected topics concerning specific periods, genres, and forms. May be repeated for credit.

MU 564. American Music. 3 Hours.

Music in the United States from colonial times to the present.

MU 565. The Evolution of Jazz. 3 Hours.

Origins and survey of jazz types and styles. Lectures, recordings, and readings.

Prerequisites: MU 165 [Min Grade: C]

MU 566. Music in World Cultures. 3 Hours.

Characteristics of musical styles found in various cultures throughout the world.

MU 599. Independent Studies. 1-3 Hour.

Directed studies in music. Permission of Department Chair based on written proposal submitted to registration.

MU 615. Technology in Music Instruction. 3 Hours.

Explores ongoing innovations in technology as applied to music instruction.

MU 629. Music Research. 3 Hours.

A study of music research, including both qualitative and quantitative techniques.

MUP-Music Courses

MUP 520. Concert Choir. 1 Hour.

Performs choral music representing a variety of periods and styles.

MUP 520L. Concert Choir Learning Lab. 0 Hours.

MUP 521. Chamber Singers. 1 Hour.

Advanced choral group. Performs variety of choral music representing different periods and styles. By audition only. Advanced music-reading skills required. May be repeated for credit.

MUP 535. Wind Symphony. 1 Hour.

Performs finest concert band literature. Open to students of all majors. May be repeated for credit.

MUP 536. Jazz Ensemble. 1 Hour.

Performs classic and contemporary jazz, swing, and rhythm and blues. May be repeated for credit.

MUP 540. Private Lessons: Voice. 1-2 Hour.

Private instruction in voice.

MUP 550. Private Lessons: Piano. 1-2 Hour.

Private instruction in piano.

MUP 561. Private Lessons: Flute. 1-2 Hour.

Private instruction in flute.

MUP 562. Private Lessons: Oboe. 1-2 Hour.

Private instruction in oboe.

MUP 563. Private Lessons: Clarinet. 1-2 Hour.

Private instruction in clarinet.

MUP 564. Private Lessons: Saxophone. 1-2 Hour.

Private instruction in saxophone.

MUP 566. Private Lessons: Bassoon. 1-2 Hour.

Private instruction in bassoon.

MUP 571. Private Lessons: Trumpet. 1-2 Hour.

Private instruction in trumpet.

MUP 572. Private Lessons: French Horn. 1-2 Hour.

Private instruction in french horn.

MUP 573. Private Lessons: Trombone. 1-2 Hour.

Private instruction in trombone.

MUP 574. Private Lessons: Euphonium. 1-2 Hour.

Private instruction in euphonium.

MUP 575. Private Lessons: Tuba. 1-2 Hour.

Private instruction in tuba.

MUP 580. Private Lessons: Percussion. 1-2 Hour.

Private instruction in percussion.

MUP 591. Private Lessons: Violin. 1-2 Hour.

Private instruction in violin.

MUP 592. Private Lessons: Viola. 1-2 Hour.

Private instruction in viola.

MUP 593. Private Lessons: Cello. 1-2 Hour.

Private instruction in cello.

MUP 594. Private Lessons: Bass. 1-2 Hour.

Private instruction in bass.

MUP 595. Private Lessons: Guitar. 1-2 Hour.

Private instruction in guitar.

NA-Nursing Anesthesia Courses

NA 600. Research Methods and Statistics. 3 Hours.

This online course will introduce the student to clinical research methods and review concepts involved in descriptive and inferential Statistics. Topics covered include, overview of the research process, literature review, research hypothesis, research designs, sample selection, measurements methods, descriptive statistics, and inferential statistics.

NA 601. Gross Anatomy. 4 Hours.

Structure and function of human body examined through laboratory dissection, lecture, models, and preceptorials. Laboratory sessions complement lecture presentations through regional dissection of thorax, abdomen, pelvis, perineum, back, and extremities with special emphasis on head and neck. Emphasis on radiological anatomy and clinical correlations.

NA 620. Anesthesia Pharmacology I. 5 Hours.

This course is designed to provide the nurse anesthesia student with knowledge of various non-anesthetic pharmacological agents and their anesthetic implications. This is accomplished through lectures, presentations, and reading assignments.

NA 621. Anesthesia Pharmacology II. 3 Hours.

This course is designed to provide the nurse anesthesia student with a basic pharmacologic foundation of medications used during an anesthetic. Included are the pharmacokinetics, pharmacodynamics, doses, side effects, uses and effects on various patient populations. This is accomplished through lectures, presentations, and reading assignments.

NA 630. Nurse Anesthesia Biochemistry. 3 Hours.

Chemistry and metabolism of biologically important compounds and common pathways of metabolism. Regulation and chemical structure of electrolytes, pH balance, and biochemical nutrition.

NA 640. Principles of Anesthesia. 4 Hours.

The study of basic principles and monitoring techniques as they relate to the delivery of anesthesia. Topics include a review of physics principles, infection control, and various patient monitoring techniques the nurse anesthesia student will need in order to provide anesthesia. Topics also include a review of airway and various other basic anesthetic principles.

NA 645. Professional Aspects of Anesthesia. 2 Hours.

Psychosocial, ethical and legal aspects, department organization and management, and history of anesthesia.

NA 646. Legal Issues and Practice Management. 1 Hour.

This online course review(s) the malpractice and quality assurance concerns in the practice of anesthesia. Emphasis on how to avoid malpractice suits through appropriate departmental quality assurance programs.

NA 650. Regional Anesthesia. 2 Hours.

Commonly used regional techniques including spinal, epidural, upper extremity blocks to include brachial plexus and Bier blocks, and ankle blocks in relation to technique, positioning and pharmacology of local anesthetics.

NA 660. Obstetrical Anesthesia. 1 Hour.

Online course is of the basic concepts concerning physiological changes that accompany pregnancy and their implication on anesthesia management of pregnant patients.

NA 661. Anesthesia for Extremes of Age. 3 Hours.

This online course focuses on the principles of anesthetic management in the pediatric and geriatric patient.

NA 670. Anesthesia Pathophysiology I. 3 Hours.

Detailed review of diseases and major systems with emphasis on pulmonary and cardiovascular systems. Specialized or advanced anesthetic management techniques for physiological and pathological states encountered in surgical patients.

NA 671. Anesthesia Pathophysiology II. 3 Hours.

Continuation of Anesthesia Pathophysiology I. Major system emphasis on renal, endocrine, neurological, musculoskeletal, and gastrointestinal systems.

NA 672. Clinical Practicum I. 6 Hours.

Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures.

NA 673. Clinical Practicum II. 12 Hours.

Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures.

NA 674. Clinical Practicum III. 12 Hours.

Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures.

NA 675. Clinical Practicum IV. 11-12 Hours.

Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures.

NA 676. Clinical Practicum V. 10 Hours.

Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures.

NA 678. Advanced Electrocardiography. 1 Hour.

Supplements content from pathophysiology and advanced practice courses relative to cardiovascular electrophysiology and its implication in perioperative period.

NA 680. Anesthesia for Surgical Specialties. 3 Hours.

Review of major surgical specialties with emphasis on orthopedic, neurological, ENT, head and neck, gynecological, thoracic, open heart/vascular, urological, transplant and plastic procedures. Advanced anesthetic management technique for specialized surgical procedures.

NA 695. Special Topics. 3 Hours.

Review of specialty concepts as presented in Anesthesia Pathophysiology I, Anesthesia Pathophysiology II, and Anesthesia for Surgical Specialties.

NA 696. Special Topics. 3 Hours.

Review of specialty concepts as presented in Anesthesia Pathophysiology I, Anesthesia Pathophysiology II, and Anesthesia for Surgical Specialties.

NA 697. Special Topics. 3 Hours.

Review of specialty concepts as presented in Anesthesia Pathophysiology I, Anesthesia Pathophysiology II, and Anesthesia for Surgical Specialties.

NA 698. Graduate Project. 2 Hours.

Plan, organize, synthesize and execute a state of the art paper on some relevant topic in anesthesia that meets the qualifications for submission to a peer reviewed journal.

NAH-Nursing - Adult Health Courses**NAH 621. Advanced Adult Gerontology Nursing I. 4-5 Hours.**

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to adult/gerontology patients.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NAH 622. Advanced Adult Gerontology Nursing II. 3-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of adult/gerontology patients. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to adult/gerontology patients.

Prerequisites: (NAH 621 [Min Grade: B] or NAH 621 [Min Grade: B]) and (NAH 685L [Min Grade: P] or NAH 685L [Min Grade: P])

NAH 623. Advanced Adult Gerontology Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to adults/gerontology patients. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NAH 622 [Min Grade: B] or NAH 622 [Min Grade: B]) and (NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P])

NAH 685L. Practicum I: Adult/Gerontology Nurse Practitioner. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to adult/gerontology patients. The focus of this course is on the delivery of health care services to adult/gerontology patients. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NAH 686L. Practicum II: Adult/Gerontology Nurse Practitioner. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to adult/gerontology patients. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for adult/gerontology patients. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NAH 621 [Min Grade: B] or NAH 621 [Min Grade: B]) and (NAH 685L [Min Grade: P] or NAH 685L [Min Grade: P])

NAH 692L. Residency: Adult/Gerontology Nurse Practitioner. 2-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to adult/gerontology patients. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of adult/gerontology patients.

Prerequisites: (NAH 622 [Min Grade: B] or NAH 622 [Min Grade: B]) and (NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P])

NBB-Nursing - Biobehavioral Courses**NBB 760. Biobehavioral Foundations in Nursing Research. 3 Hours.**

Focuses on biobehavioral interactions among psychological and cognitive domain, social and environmental domain and biology as they affect health outcomes. The emphasis will be placed on the theories and concepts of each domain of biobehavioral interactions.

NBB 761. Biobehavioral Research: State of the Sciences. 3 Hours.

Focuses on in-depth exploration and critical analysis of current biobehavioral interaction research including conceptual and methodological issues. Examines the effectiveness of interventions on biobehavioral domains and health outcomes and identifies future directions for research.

NBB 762. Biobehavioral Research Seminar. 1-3 Hour.

Focuses on in-depth understanding of a selective area of biobehavioral research. Biological interactions with psychological, cognitive, social and environmental domains will be included in relation to actual and potential health outcomes. Current understanding in a selective area of biobehavioral research will be critically analyzed for conceptual and methodological issues.

NBL-Neurobiology Courses**NBL 700. Introduction to Cellular and Molecular Neurobiology. 3 Hours.**

Topics in Neurobiology.

NBL 701. Topics in Neurobiology II. 3 Hours.

Topics in Neurobiology II.

NBL 703. Neurobiology Seminar Series. 1 Hour.

Current research topics in neurobiology presented by visiting scholars and campus faculty.

NBL 707. Cognition & Cognitive Disorder. 1 Hour.**NBL 711. Medical Neuroscience. 5 Hours.****NBL 712. Graduate Medical Neuroscience. 2 Hours.**

This course provides an overview of the entire nervous system, with special emphasis on anatomy, development, and integrative properties. Instruction is provided through lectures, laboratories, discussion groups and clinical correlations.

NBL 713. Graduate Neuroscience. 4 Hours.

The module provides the student with an integrated basic and clinical sciences view of the structure and function of the nervous system in health and disease. The module is designed to prepare students for future clerkships by providing them with a working knowledge of the developing and mature nervous system, with a perspective that ranges from molecular to behavioral. The neuroanatomical, neurochemical and neurophysiological aspects of the brain and spinal cord are balanced by large and small group discussions of the pathology and treatment of neurological and psychiatric diseases.

NBL 715. Lab Rotation I. 1-6 Hour.**NBL 716. Lab Rotation II. 1-6 Hour.****NBL 717. Lab Rotation III. 1-15 Hour.****NBL 718. Lab Rotation IV. 3-6 Hours.****NBL 720. Membrane Excitability Biophysics. 3 Hours.**

The course will consist of 7 topics covered over 8 weeks (including course orientation): Properties of lipid bilayers, Ions in solution, Ion channel permeability and selectivity, Ligand-dependent channel gating, G-protein-coupled receptor kinetics, Transporters and Pumps, and Voltage-dependent channel gating. For each topic a faculty member will present an overview lecture and students will present a single mini-lecture on a more focused concept within the topic. The mini-lecture will be based on published literature and should be discussed before presentation with the topic leader. It should be a formal PowerPoint lecture lasting a maximum of 20 min.

NBL 725. Seminar Practice in Cellular and Molecular Neuroscience. 1 Hour.

The course will provide guidance and practice in the presentation of research seminars. It will also provide a forum for students to become actively involved in listening to seminar presentations and participating in speaker questioning. Once during the course each student will present a 50 minute seminar describing his/her current research, during which the other students and participating faculty will ask questions and provide comments and suggestions. Following the presentation the student will receive a constructive critique from the faculty.

NBL 729. Mechanisms of Signal Transduction. 1-3 Hour.**NBL 730. Neurobiology of Disease. 3 Hours.**

Major advances have been made in understanding diseases of the nervous system at a cellular and molecular level. Several new findings have had therapeutic implications and have resulted in the development of novel drugs or new disease management strategies. This course intends to review the most common brain and CNS disorders. It will offer a brief clinical introduction to the disease, but will emphasize reviewing current knowledge of the disease at a cellular and molecular level. The course will be taught by several UAB professors who have active research programs directed at studying nervous system diseases. The course is designed for advanced graduate and medical students who have a good neurobiology background with NEUR702/NBL750/NBL7.

NBL 735. Statistics for Biomedical Science. 3 Hours.**NBL 740. Mechanisms of Memory. 4 Hours.**

This course integrates the molecular, cellular, systems, and medical components of the core curriculum with an emphasis on cognition and cognitive disorders. Thus, the course covers topics ranging from genes and molecules to human behavior, using cognitive function and clinical cognitive disorders as the unifying theme, with a focus on learning and memory and disorders of these processes.

NBL 743. Methods in Neuroimaging. 3 Hours.

Cognitive neuroscience research has provided valuable insights into the workings of the human brain. The techniques used in cognitive neuroscience span from postmortem brain studies to neuroimaging studies. The ability to perform neuroimaging studies on awake human individuals engaged in cognitive, social, sensory, and motor tasks has produced a conceptual revolution in the study of human cognition. This course will comprehensively examine the methods and techniques in neuroimaging with the primary goal of building fundamental knowledge in the concepts and techniques of neuroimaging. By the end of the course, students will have gained basic knowledge in the field and will be able to read and critically assess scientific journal articles that make use of a variety of neuroimaging methods. The secondary and implicit goal of this course is to create and nurture, in students, a genuine interest in neuroscience and neuroimaging. The course will explore techniques, such as single and multi cell recordings, deep brain stimulation, electroencephalography, functional magnetic resonance imaging, and diffusion tensor imaging. This course will be an apt venue for graduate students interested in neuroscience research to build a platform for continuing studies.

NBL 751. Cellular and Molecular Neurobiology. 3 Hours.**NBL 752. Developmental Neuroscience. 3 Hours.**

The course will utilize the scientific literature and faculty lectures to cover a broad range of topics related to the mechanisms of building a brain. The topics covered range from neural induction in early development, to axonal guidance and synapse formation, to neuro-gial interactions in the adult nervous system. Grades will be based on two exams and student participation in class discussions.

NBL 753. Introduction Lab Meth Cell Neurophys/Mole Neurobio. 4 Hours.**NBL 754. Cell Biology of the Nervous System. 3 Hours.**

THIS COURSE PROVIDES STUDENTS WITH AN INVESTIGATION INTO THE STRUCTURE AND COMPOSITION OF NERVE CELLS. EMPHASIS IS ON CELL TRAFFICKING, VIROLOGY, AND GENETICS AS IT RELATES SPECIFICALLY TO NEURONS AND GLIA.

NBL 755. Mind/Brain. 3 Hours.**NBL 758. Synaptic Dynamics. 3 Hours.**

A student-driven discussion of the molecular and physiological properties of synapses, this course explores the molecular physiology underlying the control of neurotransmitter release and the postsynaptic response. Quantal theories of synaptic transmission will be discussed with respect to anatomical and physiological differences between central synapses and the neuromuscular junction. Synaptic plasticity mechanisms will also be discussed.

NBL 770. Glial Biology in Medicine. 3 Hours.

This course will cover the role of astrocytes, oligo-dendrocytes and microglia in both the normal development and function of the nervous system, and also their role in injury and disease. Presentations will be student led, with the assistance of the faculty.

Prerequisites: NBL 700 [Min Grade: C] or CMB 754 [Min Grade: C] or NBL 712 [Min Grade: C]

NBL 772. Special Topics in Neurobiology II. 3 Hours.

This course will draw on the cutting edge knowledge, expertise and information provided by the spring Neurobiology Seminar program. There will be two one-hour meetings per week. Prior to each seminar, students will discuss a review article pertinent to the seminar topic, and a recent research paper from the speaker's lab. Following the seminar, new findings presented will be discussed. Students will also have the opportunity (optional) of meeting the speaker at lunch prior to the seminar or at a post-presentation reception.

NBL 773. Neuronal Signaling Journal Club. 1 Hour.

Understanding how the brain works at the molecular level requires appreciation of the complex neuronal signaling pathways that regulate everything from differentiation to synaptic transmission. Small changes in even a single pathway can result in complex downstream consequences and disease development. This journal club focuses on understanding the neuronal signaling pathways underpinning brain function in health and disease.

NBL 774. Stem Cell Biology. 1-3 Hour.**NBL 775. Special Topics in Neurobiology III. 1 Hour.**

The aging process is amazing. One person could choose to not exercise, eat fatty foods with abandon, and engage in other risky behaviors but still live to 100 relatively disease free. Meanwhile another develops dementia in their 70s after living a life doing all the "right" things for their body. Often in our desire to prevent and treat disease, we do not spend time studying normal aging process, and thus we don't understand the system we are working within. To effectively target disease requires a thorough understanding not only of disease mechanism but also of how the brain changes during aging. Even when the cognitive aging process does not directly result in development of disease, the changes that occur effect quality of life and could be targeted for intervention. This journal club will focus on exploring papers investigating how the aging process impacts the brain.

NBL 776. Special Topics in Neurobiology IV. 1 Hour.

This course covers different topics that have to do with Neurobiology.

NBL 777. The Biology of Neurodevelopmental Disorders. 3 Hours.

Investigations into disorders of the nervous system that begin during fetal development, infancy and/or childhood. Topics covered will include: autism, mental retardation, cerebral palsy, metabolic disorders, genetic disorders, epilepsy, learning and memory. The course will consist of faculty lectures from basic and clinical investigators, student presentations and clinical observations of testing, evaluation and diagnosis of developmental disorders in children. Prerequisites: Introductory neurobiology course. Students: advanced graduate students, postdoctoral fellows, medical students and residents.

NBL 778. Autism and Dev Disease Journal Club. 1 Hour.

Autism and Dev Disease Journal Club.

NBL 779. Journal Club Topics. 1 Hour.**NBL 780. Selected Topics in Neurobiology I. 3 Hours.**

This course covers different topics that have to do with Neurobiology.

NBL 781. Selected Topics in Neurobiology II. 1 Hour.**NBL 782. Neuroimaging Journal Club. 1 Hour.**

The Neuroimaging Journal Club was created to encourage the discussion of papers and research related to brain imaging. Modalities discussed including but not limited to magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), diffusion tensor imaging (DTI), magnetic resonance spectroscopy (MRS), and electroencephalography (EEG).

NBL 783. Principles of Scientific Integrity. 1 Hour.**NBL 784. Synaptic Transmission and Ion Channel Journal Club. 1 Hour.**

Synaptic Transmission & Ion Channels Journal Club.

NBL 785. Neurobiology Journal Club-Synaptic Plasticity. 1 Hour.**NBL 786. Cell Death Mech Journal Club. 1 Hour.**

Discussion and critical evaluation of seminal or current papers on a broad topic of cell death mechanisms in health and diseases, with special emphasis on autophagic mechanisms impact on cell death.

NBL 787. Neurodegenerative Disease Journal Club. 1 Hour.

The course will consist of topics related to molecular mechanisms of neurodegenerative disorders. This is a Journal Club style class. Students will read and discuss recent manuscripts (published within the past 6-12 months) that are relevant to specific focuses, mechanisms, models of neurodegenerative disorders. Each week a student will be responsible to briefly present (10 minutes) a manuscript related to a specific topic.

NBL 788. Biology of Glial Cells Journal Club. 1 Hour.

This journal club covers contemporary primary articles on the biology of glial support cells, their role in normal brain function and Neurological disease.

NBL 789. Neurobiology Journal Club. 1 Hour.**NBL 790. Lab Methods. 1 Hour.**

This course will describe different methodological approaches used in research. The objective is to empower students with sufficient knowledge that they will be able to draw upon these techniques when appropriate in their current and future research careers. The course is Pass/Fail, and is graded based on attendance and critiques of the presentations (no exams, no papers, no required reading). Auditors are welcome.

NBL 798. Non-Dissertation Research in Neurobiology. 1-12 Hour.

Research hours in the lab.

NBL 799. Dissertation Research in Neurobiology. 1-12 Hour.

Research hours in the lab.

Prerequisites: GAC D

NCA-Nursing - Critical Care Courses

NCA 616. Diagnostic and Therapeutic Procedures for Advanced Acute Care Nursing Practice. 2 Hours.

This course is designed to provide the student with opportunities to obtain advanced knowledge of and to learn advanced clinical skills in diagnostic or therapeutic procedures related to the role of the advanced practice nurse in acute and critical care. Specific content and skills in this course will focus on procedures associated with diagnostic and evaluative monitoring of acutely or critically ill patient. COREQ: NCA 621.

NCA 617. Diagnostic and Therapeutic Procedures II for Advanced Nursing Practice. 1 Hour.

This course is designed to provide the student with opportunities to obtain advanced knowledge of and to learn advanced clinical skills in diagnostic or therapeutic procedures related to the role of the advanced practice nurse in acute and critical care. Specific content and skills in this course will focus on therapeutic procedures commonly used in the acute and critical care setting. COREQ: NCA 622.

Prerequisites: NCA 616 [Min Grade: B]

NCA 621. Adult Gerontology Acute Care Nursing Practice I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: (NUR 610 [Min Grade: B] or NUR 610 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NCA 622. Adult Gerontology Acute Care Nursing Practice II. 3-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B]) and (NCA 685L [Min Grade: P] or NCS 685L [Min Grade: P])

NCA 623. Adult Gerontology Acute Care Nursing Practice III. 3-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NCA 622 [Min Grade: B](NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCA 686L [Min Grade: P] or NCS 686L [Min Grade: P])

NCA 685L. Adult Gerontology Acute Care Nursing: Practicum I. 1-3 Hour.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is on the delivery of health care services to the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 610 [Min Grade: B] or NUR 610 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NCA 686L. Adult Gero Acute Care Nursing: Practicum II. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for the emancipated minor (age 13 or older), adult, and geriatric populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B]) and (NCA 685L [Min Grade: P] or NCA 685L [Min Grade: P])

NCA 692L. Residency: Adult Gerontology Acute Care Nursing. 3-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to the emancipated minor (age 13 or older), adult, and geriatric population. The focus of this course is to evaluate progress toward achievement of professional competencies.

The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of the emancipated minor (age 13 or older), adult, and geriatric population.

Prerequisites: (NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCA 686L [Min Grade: P] or NCA 686L [Min Grade: P])

NCC-Nursing - Child/Adolescent Courses**NCC 613. Acute & Continuing Care Pediatric Pharmacology. 1 Hour.**

This course is a supplementary course for Acute and Continuing Care Nurse Practitioner students to provide them with information necessary to safely and competently prescribe medications for infants, children and adolescents. It complements the information provided in NUR 613 Pharmacology and Therapeutics but focuses on the unique physiologic and metabolic characteristics of this population.

NCC 621. Advanced Pediatric Nursing I - Acute Care. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to children, adolescents and their families.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NCC 622. Advanced Pediatric Nursing II - Acute Care. 2-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of children, adolescents and their families. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to children, adolescents and their families.

Prerequisites: (NCC 621 [Min Grade: B] or NCC 621 [Min Grade: B]) and (NCC 685L [Min Grade: P] or NCC 685L [Min Grade: P])

NCC 623. Advanced Pediatric Nursing III - Acute Care. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to children, adolescents and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NCC 622 [Min Grade: B] or NCC 622 [Min Grade: B]) and (NCC 686L [Min Grade: P] or NCC 686L [Min Grade: P])

NCC 685L. Clinical Practicum I: Advanced Pediatric Nursing - Acute Care. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to children, adolescents and their families. The focus of this course is on the delivery of health care services to children, adolescents and their families. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NCC 686L. Clinical Practicum II: Advanced Pediatric Nursing - Acute Care. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to children, adolescents and their families. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for children, adolescents and their families. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NCC 621 [Min Grade: B] or NCC 621 [Min Grade: B]) and (NCC 685L [Min Grade: P] or NCC 685L [Min Grade: P])

NCC 688L. Child/Adolescent Acute and Continuing Care Nurse Practitioner Practicum III. 2 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles. Prerequisite: NCC 622 and NCC 686L. Corequisite: NCC 623.

Prerequisites: (NCC 622 [Min Grade: B] and NCC 686L [Min Grade: P]) or (NCC 622 [Min Grade: B] and NCC 686L [Min Grade: P])

NCC 692L. Clinical Practicum III: Advanced Pediatric Nursing - Acute Care. 3-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to children, adolescents and families. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of children, adolescents and their families.

Prerequisites: (NCC 622 [Min Grade: B] or NCC 622 [Min Grade: B]) and (NCC 686L [Min Grade: P] or NCC 686L [Min Grade: P])

NCH-Nursing -Child Health Courses

NCH 760. Child Health Theories and Concepts. 3 Hours.

This course will focus on selected theories and concepts related to child health, child health nursing and child health nursing education. Emphasis will be on the theoretical underpinnings of the theories and concepts, major theorists associated with the theories and concepts, measurement strategies and instruments, and implications for research, education, and practice.

NCH 761. Emerging Issues in Child-Health Nursing. 3 Hours.

This course will focus on emerging issues in child health, child health nursing and child health nursing education. Emphasis is on current thought, state of the science and research related to topics which affect the health and lives of infants, children, and adolescents. Pivotal MCH, public health resources and the latest research and information will be used to guide discussion.

NCL-Nursing-Clinical Nur Lead Courses

NCL 620. Systems in Population-based Care I. 3 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of theoretical and practical concepts required to measure and improve healthcare quality, outcomes and safety. The student will focus on 5 roles required for the beginning Clinical Nurse Leader: Clinician, Member of Profession, Interdisciplinary Healthcare Team Manager, Outcomes Manager and Lifelong Learner. The course explores theories of change, complexity, horizontal and lateral leadership, microsystems and decision-making and their relationship to nursing and the health care system. The following elements are integrated into this course: critical thinking, research, scholarly writing, scientific integrity, ethics, cultural diversity, and social issues. Prerequisite: NUR 600 and NUR 643. Corequisite: NCL 685L.

Prerequisites: (NUR 600 [Min Grade: C] and NUR 643 [Min Grade: C] and NUR 518L [Min Grade: P])

NCL 621. Systems in Population-based Care II. 3 Hours.

This course is designed to provide the student with opportunities to develop additional knowledge of theoretical and practical concepts required to measure and improve healthcare quality, outcomes and safety. The student will focus on the four additional roles required for the beginning Clinical Nurse Leader: Information Manager, Systems Analyst/Risk Manager, Advocate, and Educator. The student will be expected to expand proficiency of previously learned Clinical Nurse Leader roles: Clinician, Member of a Profession, Team Manager, Outcomes Manager and Lifelong Learner. At the completion of this course the student will have explored all of the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. Prerequisite: NCL 620 and NCL 685L. Corequisite: NCL 686L.

Prerequisites: NCL 620 [Min Grade: B] and NCL 685L [Min Grade: P] and (NUR 512 [Min Grade: B] or NUR 612 [Min Grade: B])

NCL 685L. CNL Practicum I. 2 Hours.

This course provides the student, at an introductory level, the opportunity to observe and apply in a clinical setting five of the nine CNL role functions: Clinician, Member of a Profession, Team Manager, Outcomes Manager and Lifelong Learner. The student will use these skills to focus on improving quality of care and patient safety. The student will be expected to utilize principals of critical thinking, evidence based research, scientific integrity and ethics, cultural diversity, and social issues to achieve above objectives. Prerequisite: NUR 600 and NUR 643. Corequisite: NCL 620.

Prerequisites: NUR 600 [Min Grade: C] and NUR 643 [Min Grade: C]

NCL 686L. CNL Practicum II. 2 Hours.

Building on the preceding practicum, this course provides the student the opportunity to observe and apply in a clinical setting the remaining four of the CNL role functions. This course will focus on the student developing the CNL roles of information manager, systems analyst/risk manager, advocate, and educator. The student will be expected to expand proficiency of the previous CNL roles of clinician, professional, interdisciplinary team manager, outcomes manager and lifelong learner. The student will use this knowledge and skill to evaluate, design and implement interventions to improve quality of care and patient safety. At the completion of this course the student will have explored all of the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper. Prerequisite: NCL 620 and NCL 685L. Corequisite: NCL 621.

Prerequisites: NCL 620 [Min Grade: B] and NCL 685L [Min Grade: B]

NCL 692L. CNL Capstone Practicum. 5 Hours.

This course provides the student the opportunity to integrate and apply in an intensive clinical rotation the nine CNL roles. The student will be expected to expand their proficiency in the roles of advocate, professional, team manager, information manager, systems analyst/risk manager, clinician, outcomes manager, educator and lifelong learner. The student will use these skills to design, implement, evaluate, and disseminate plans of care to improve quality and patient safety. At the completion of this course the student will demonstrate, at novice level, the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper. Prerequisite: NCL 621 and NCL 686L.

Prerequisites: NCL 621 [Min Grade: B] and NCL 686L [Min Grade: P]

NCS-Nursing - Clinical Spec Courses

NCS 616. Foundations of Clinical Nurse Specialist Practice. 1 Hour.

This graduate speciality course is designed to give the Clinical Nurse Specialist student the theoretical underpinnings of the role of the CNS. Parameters of Clinical Nurse practice will be explored through discussion and in-class simulations of practice dilemmas. Course work will include information on the background of the Clinical Nurse Specialist, information on the logistics of advanced practice as it relates to the CNS role, and information on devising assessment strategies for practice problems. This course includes integration of critical thinking, scholarly writing, human diversity, ethics, health care economics and social issues.

NCS 617. Phenomenon of Concern to Advanced Practice Nurses. 1 Hour.

This graduate specialty course focuses on phenomena of concern to advanced practice nurses and is designed to give the Clinical Nurse Specialist student the theoretical underpinnings of selected non-disease based causes of illness. Clinical/didactic information regarding symptoms, functional problems, and risk behaviors will be included to assist the student operationalize the role of the CNS in the patient/client sphere of influence, the nurse/nursing service sphere of influence, and the organization sphere of influence.

NCS 685L. Prac I: Clinical Specialization in Adult Health Nursing. 1,2 Hour.

This course is the first clinical practicum in the Clinical Nurse Specialist option. The student is provided the opportunity to develop the CNS role with a focus on the care of non-disease based etiologies of symptoms, functional problems, and risk behaviors among patients/ clients within a defined specialty. This practicum may include experiences in outpatient or inpatient settings. The student is expected to design evidence-based interventions for acute and/or chronic health problems commonly occurring within a defined specialty area. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. Corequisite: NCA 621.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NCS 686L. Practicum II: Clinical Specialization in Adult Health Nursing. 1-2 Hour.

This course further prepares the student in the Clinical Nurse Specialist role. The student continues to apply knowledge and current research findings to the management of selected acute and chronic health problems commonly occurring in the target population. While focusing on the care of acutely ill clients, the student develops the CNS role with nursing personnel through identifying and defining problems and opportunities; identifying and articulating factors contributing to resource management needs and outcomes; developing innovative solutions; and evaluating the effect of solutions. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NCA 621 and NCS 685L. Corequisite: NCA 622.

Prerequisites: (NCS 685L [Min Grade: P] or NCS 685L [Min Grade: P]) and (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B])

NCS 687L. Practicum III: Clinical Specialization in Adult Health Nursing. 1-2 Hour.

This course further prepares the student in the Clinical Nurse Specialist role. The student continues to apply knowledge and current research findings to the management of selected acute and chronic health problems commonly occurring in the target population. While focusing on the care of acutely ill clients, the student develops the CNS role with nursing personnel through identifying and defining problems and opportunities; identifying and articulating factors contributing to resource management needs and outcomes; developing innovative solutions; and evaluating the effect of solutions. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course, NCA 692L. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NCS 686L. Corequisite: NCA 623.

Prerequisites: (NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCS 686L [Min Grade: P] or NCS 686L [Min Grade: P])

NCS 692L. Residency in Clinical Specialization. 2-4 Hours.

This course is the culminating experience for the student to practice in the role of the CNS. This course emphasizes the application of previously learned theories and knowledge from nursing and other disciplines. The student will implement the role of the CNS to manage the health care of adult clients, teaching, nurses and clients, discussing employment issues and evaluating products for use in clinical practice. Students arrange their own clinical sites with assistance/approval from clinical faculty. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Prerequisite: NCA 623 and NCA 687L.

Prerequisites: (NCA 623 [Min Grade: B] and NCS 687L [Min Grade: P]) or (NCA 623 [Min Grade: B] and NCS 687L [Min Grade: P])

NCV-Nursing - Cardiovascular Courses**NCV 630. Advanced Cardiovascular Nursing. 3 Hours.**

This course is designed to provide a conceptual base for student to diagnose and treat human responses to actual and/or potential cardiovascular health problems with concomitant biophysical, psychological, sociocultural and spiritual environmental variables. Emphasis is placed on patients with cardiovascular health problems and the selection and utilization of concepts and theories relevant to advanced cardiovascular nursing. Political influences on cardiovascular health are explored. May be taken as an elective.

NCV 631. Electrocardiography for Advanced Nursing Practice. 3 Hours.

Concepts presented in the course include the biophysical, psychological, developmental, and adaptive nature of the human being as it relates to the formation, function, and regulation of the cardiac electrical system. Concepts of cardiovascular adaptation to biophysical and psychosocial variables are emphasized. Explanations for electrophysiologic and electrocardiographic phenomena are offered, as are nursing and medical interventions for cardiac electrical abnormalities. Content focuses on the concepts of electrophysiology and electrocardiography, interpreting cardiac electrical abnormalities, and analyzing the various medical and nursing therapies for the electrical abnormalities and their applications to the practice of advanced nursing. May be taken as an elective.

NDP-Nursing - Dual Pediatric Courses**NDP 613. Dual Option Pediatric Pharmacology. 2 Hours.**

This course is a supplement to the current pharmacology course, NUR 613, required of all MSN Advanced Practice students. The content is specific to infants, children and adolescents with their unique physiologic and metabolic characteristics. Pre or corequisite: NUR 613.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NDP 621. Dual Option Pediatric I. 4-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage primary, acute, and continuing health problems of children and adolescents. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care child/adolescent nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NDP 622. Dual Option Pediatric II. 3-5 Hours.

This course is designed to provide the students with opportunities to integrate in-depth knowledge of management of acute and continuing health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience chronic, complex and life-threatening health problems. Students will have the opportunity to develop strategies to present information about acute and continuing health care problems to peers and colleagues. The following elements are incorporated into the course: critical thinking, crisis management, health promotion and disease prevention, scientific integrity and ethics, human diversity, cultural competence, social issues and professional role development.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P])

NDP 623. Dual Option Pediatric III. 4-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage chronic health problems of children and adolescents. Additionally, students will be provided with opportunities to integrate in-depth knowledge of management of chronic health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience chronic, complex health problems. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care pediatric nurse practitioners. Students will have the opportunity to develop strategies to present information about chronic health care problems to peers and colleagues. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P])

NDP 624. Dual Option Pediatric IV. 3-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage critical illnesses in children and adolescents. Additionally, students will be provided with opportunities to integrate in-depth knowledge of management of critical health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience critical and complex health problems. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care pediatric nurse practitioners. Students will have the opportunity to develop strategies to present information about critical health care problems to peers and colleagues. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: NDP 623 [Min Grade: B] and NDP 687L [Min Grade: P]

NDP 685L. Dual Option Pediatric Nurse Practitioner Practicum I. 3 Hours.

This course prepares the student in the Dual Option Pediatric Nurse Practitioner role. The student develops the NP role with patients/clients by providing health care to individual children, adolescents, families, and groups at any point of the continuum of health statuses in acute and continuing care settings. The student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include acute and chronic health problems and human responses to disease in children, adolescents and their families. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, cultural sensitivity and social issues. The advanced practice role emphasis in this course provides experiences for the developing Dual Option Pediatric Nurse Practitioner including interdisciplinary collaboration, case management, educator, and consultant roles.

NDP 686L. Dual Option Pediatric Nurse Practitioner Practicum II. 3 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (Le. (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P])

NDP 687L. Dual Option Pediatric Nurse Practitioner Practicum III. 3 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles.

Prerequisites: (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P])

NDP 688L. Dual Option Pediatric Nurse Practitioner Practicum III. 3 Hours.

NDP 688L prepares the student in the Dual Option Pediatric Nurse Practitioner role. The student develops the NP role with patients/clients by providing health care to individual children, adolescents, families, and groups at any point of the continuum of health statuses in acute and continuing care settings. The student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include acute and chronic health problems and human responses to disease in children, adolescents and their families. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, cultural sensitivity and social issues. The advanced practice role emphasis in this course provides experiences for the developing Dual Option Pediatric Nurse Practitioner including interdisciplinary collaboration, case management, educator, and consultant roles.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P]) and (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P]) and (NDP 623 [Min Grade: B] or NDP 623 [Min Grade: B]) and (NDP 687L [Min Grade: P] or NDP 687L [Min Grade: P])

NDP 692L. Residency: Dual Option Pediatric Nurse Practitioner. 4-8 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role to be a beginning expert in the diagnosis and management of pediatric patient problems. In the residency, the student is expected to continue to grow toward becoming an independent practitioner, specializing in the care of children. The student further develops the pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human response to disease.

Prerequisites: (NDP 623 [Min Grade: B] or NDP 623 [Min Grade: B]) and (NDP 687L [Min Grade: P] or NDP 687L [Min Grade: P])

NFA - RN First Assist Courses**NFA 620. Surgical Techniques. 3 Hours.**

This course will focus on the expanded functions unique to the RNFA role during operative and invasive procedures. The course includes the recommended content of the Core Curriculum for the RN First Assist and is designed to develop the beginning knowledge and skills needed for safe RNFA practice. Surgical practice and techniques such as sterile technique, positioning and draping, using instruments and medical devices, providing exposure, handling and cutting tissue, providing hemostasis, and suturing will be emphasized in a 2 hands on 2 swine laboratory experience. The course will be taught in a blended distance accessible format and on campus 4-5 day intensive session in an animal surgical laboratory. This format will enable each student to apply surgical principles and techniques to a swine surgical model. Students without operating room experience will be required to take the 4 credit hours (5 day intensive) and students with operating room experience will take 3 credit hours (4 day intensive). Admission to the ACNP/RNFA graduate program or RNFA post masters option required.

NFA 621. Advanced Perioperative Nursing I. 3 Hours.

This course prepares the advanced perioperative student to develop a theoretical knowledge base for advanced perioperative nursing. The course includes the recommended content of the Core Curriculum for the RN First Assist and is designed to develop the theoretical knowledge needed for safe RNFA practice. Content includes an in depth review of anatomy and physiology of surgical client, and prevention of injury. Knowledge of comprehensive perioperative nursing, which serve as the foundation for critical, technical, and clinical decision making in RNFA role at the advanced level. Selective literature, which evidences best practice strategies of the RNFA role and considerations of vulnerable populations requiring surgical interventions, will also be examined in selective surgical specialties. The following elements are integrated into the course: critical thinking, research utilization, ethics, human diversity, and social issues. The advanced perioperative practice role emphasis in this course continues the trajectory of the RNFA as a beginning expert and includes role components such as interdisciplinary collaborator, educator, and consultant. Admission to the ACNP/RNFA graduate program or RNFA post masters option required.

NFA 622. Advanced Perioperative Nursing I: Practicum. 1-3 Hour.

This course prepares the advanced perioperative student to function in the expanded role of first assistant to the surgeon. In this practicum, the student is expected to continue to grow toward becoming a competent advanced perioperative nurse, specializing in problems requiring surgical interventions and management and the full scope of RNFA practice. Further, the student continues to apply, knowledge and current research findings to the management of actual and potential health problems, which include common surgical diseases and human responses to disease. The following elements are integrated into the course: critical thinking, research utilization, scientific integrity and ethics, human diversity, and awareness of social and professional issues. The advanced perioperative practice role emphasis in this course continues the trajectory of the RNFA as a beginning expert and includes role components such as interdisciplinary collaborator, educator, and consultant. Prerequisite: NFA 620 and NFA 621.

Prerequisites: (NFA 620 [Min Grade: B] and NFA 621 [Min Grade: B]) or (NFA 620 [Min Grade: B] and NFA 621 [Min Grade: B])

NFH-Nursing - Family Courses**NFH 621. Family Nurse Practitioner I. 3-5 Hours.**

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to pediatric, adult and elderly populations.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NFH 622. Family Nurse Practitioner II. 3-4 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to pediatric, adult and elderly populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for pediatric, elderly and adult populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NFH 621 [Min Grade: B] or NFH 621 [Min Grade: B]) and (NFH 685L [Min Grade: P] or NFH 685L [Min Grade: P])

NFH 623. Family Nurse Practitioner III. 5 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for clients with commonly occurring chronic and complex health problems with diverse cultures over the life span. Students will also have the opportunity to develop strategies to market the nurse practitioner role, to create a specific practice position and to explore strategies to market their role in family health care. The following elements are integrated into the course: critical thinking, health promotion and disease prevention, scientific integrity and ethics, human diversity and social issues and professional role development.

Prerequisites: NFH 622 [Min Grade: B]

NFH 623L. Family Nurse Practitioner III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to pediatric, adult, and elderly populations. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NFH 622 [Min Grade: B] or NFH 622 [Min Grade: B]) and (NFH 686L [Min Grade: P] or NFH 686L [Min Grade: P])

NFH 685L. Practicum I: Family Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to pediatric, adult and elderly populations. The focus of this course is on the delivery of health care services to pediatric, adult and elderly populations. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NFH 686L. Practicum II: Family Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to pediatric, adult and elderly populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for pediatric, adult and elderly populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NFH 621 [Min Grade: B] or NFH 621 [Min Grade: B]) and (NFH 685L [Min Grade: P] or NFH 685L [Min Grade: P])

NFH 692L. Residency: Family Nurse Practitioner. 3-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to pediatric, adult and elderly populations. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of pediatric, adult and elderly populations.

Prerequisites: (NFH 622 [Min Grade: B] or NFH 622 [Min Grade: B]) and (NFH 686L [Min Grade: P] or NFH 686L [Min Grade: P])

NFH 760. Family Health/Caregiving Across The Lifespan. 3 Hours.

The reciprocal relationship between family functioning and health is well known. The family plays an important and substantial role in the well-being of individuals and in turn, family relationships and functioning are significantly influenced by the health behaviors and status of family members. Families continue to be the major source of caregiving across the lifespan and a rapidly growing body of research speaks to the positive and negative correlates of family caregiving for persons with crisis, chronic or terminal health problems. The study of caregiving within the context of the family lifespan offers the student an opportunity to understand health and illness within a framework of human development, interaction, and adaptation, as well as cultural and gender norms.

NFH 761. Theory Development In Family Health And Caregiving. 3 Hours.

This is a survey course in which students develop skill in evaluating selected theories for their current or potential relevance to research on family health, individual health in the context of the family, and family caregiving processes in health and illness. Students become conversant with a range of family and caregiving theories toward the goal of assessing their relevance for further knowledge development in family health and caregiving processes. Students will evaluate whether empirical findings refute or support traditionally accepted or theoretically based knowledge; they will review empirical literature to draw conclusions regarding emerging theories, associated constructs and hypotheses; and they will propose testable theoretically-derived hypotheses and theoretically-driven family focused interventions aimed at altering health status of families.

NFH 762. Family Research Methods. 3 Hours.

This course provides the student with the opportunity to develop skill in the critical analysis and application of family research methods as a foundation for conducting family research. In this course, students analyze and apply research findings and acquire and apply the knowledge necessary to implement family research studies. Students examine the utilization of exploratory, descriptive, longitudinal, and experimental designs in family studies, apply techniques for strengthening designs and address instrumentation, sampling, data collection, and analysis issues particular to family research. Experience is gained in instrument evaluation and selection, decision-making regarding level of variable formation, model validation through multiple measurement, and selection of appropriate statistical tests to capture the complexity and dynamic nature of the family.

NGN-Nursing - Gerontological Courses**NGN 630. Advanced Practice Gerontology Nursing. 2 Hours.**

This course is designed to provide students in all advanced practice nursing tracks with the ability to integrate knowledge of gerontology and geriatrics with other specialty knowledge concerning the management of health care of adults. The emphasis in the course is on providing students with the background to apply this knowledge with elders and their families.

NGN 631. Gerontology and Geriatrics for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with the opportunity to integrate knowledge of gerontology and geriatrics with previously acquired knowledge concerning the management of health care of adults. It is the required support course for students in the gerontological nurse practitioner option and may be taken as an elective by students in other options. In this course students acquire knowledge of gerontology and geriatrics that is relevant to the nursing and medical management of health care of elders. This knowledge is applied in the required clinical course.

NGN 632. Chronic Health Conditions for Advanced Nursing Practice. 3 Hours.

This is a required support course for students in the gerontological nurse practitioner option, and may be taken as an elective by students in other options. In this course students acquire knowledge of a variety of clinical topics that are relevant to the nursing and medical management of health care of persons with complex chronic disorders such as urinary/fecal incontinence, chronic wounds and psychiatric disorders. The course is designed to provide students with the opportunity to integrate knowledge of selected chronic conditions with previously acquired knowledge concerning the management of health care of patients.

NGN 685L. Practicum I: Gerontological Nurse Practitioner. 2 Hours.

This is the first of two gerontological practica courses for the dual adult/Gerontological Nurse Practitioner specialty. In selected clinical settings students are expected to integrate the knowledge and competencies gained from foundation courses and didactic content to further develop the Gerontological Nurse Practitioner role. This course allows the student to develop the role by providing health care services to individuals, families, and groups, while emphasizing the promotion of health and prevention of disease. The student addresses the management of actual and potential health problems including common diseases and human responses to diseases. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, and social issues. Prerequisite: NUR 614L. Corequisite: NAH 621.

Prerequisites: NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B]

NGN 686L. Practicum II: Gerontological Nurse Practitioner. 2 Hours.

This is the second of two gerontological practica courses for the dual adult/Gerontological Nurse Practitioner specialty. In selected clinical settings students are expected to integrate the knowledge and competencies gained from foundation courses and didactic content to further develop the Gerontological Nurse Practitioner role. This course allows the student to develop the role by providing health care services to individuals, families, and groups, while emphasizing the promotion of health and prevention of disease. It is anticipated that the student will be increasingly independent and skilled as the clinical experience progresses, allowing the student to contribute more toward the management of health problems. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, and social issues. Prerequisite: NAH 621 and NGN 685L. Corequisite: NAH 622.

Prerequisites: (NAH 621 [Min Grade: B] and NAH 658L [Min Grade: P]) or (NAH 621 [Min Grade: B] and NAH 621 [Min Grade: P])

NGN 692L. Residency: Gerontological Nurse Practitioner. 1-4 Hour.

This course is the third of three clinical practicum courses and is designated as the culminating practical experience for Gerontology nurse practitioner students. This course encourages the student to apply knowledge and theories from the core courses as well as previous clinical and clinical support courses. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NGN 686L.

Prerequisites: NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P]

NGN 731. Advanced Practice Gerontological Nursing I. 3 Hours.

This course is designed to provide DNP students who are already adult, adult acute, and/or family nurse practitioners and who are delivering care to a majority of gerontological patients, with an advanced theoretical and empirical knowledge of aging. This level of specialized gerontological nursing knowledge is beyond what would be obtained in an acute, adult, or family nurse practitioner program. The content in NGN 731Q and NGN 732Q satisfies the ANCC didactic requirements for a secondary certification as a gerontological nurse practitioner under the alternative eligibility requirements. This course and NGN 732Q should be considered for students interesting in a secondary licensure and is not intended for initial licensure as an advanced practice gerontological nurse. Documentation of clinical hours required by the ANCC is incumbent upon the student, not the UASON. Questions concerning the alternative eligibility requirements may be addressed by course faculty or by the ANCC registrar.

NGN 732. Advanced Practice Gerontological Nursing II. 3 Hours.

This course is designed to provide DNP students who are already adult, adult acute, and/or family nurse practitioners and who are delivering care to a majority of gerontological patients, with an advanced theoretical and empirical knowledge of aging. This level of specialized gerontological nursing knowledge is beyond what would be obtained in an acute, adult, or family nurse practitioner program. The content in NGN 731Q and NGN 732Q satisfies the ANCC didactic requirements for a secondary certification as a gerontological nurse practitioner under the alternative eligibility requirements. This course and NGN 731Q should be considered for students interesting in a secondary licensure and is not intended for initial licensure as an advanced practice gerontological nurse. Documentation of clinical hours required by the ANCC is incumbent upon the student, not the UASON. Questions concerning the alternative eligibility requirements may be addressed by course faculty or by the ANCC registrar.

NHSA-Nursing and Health Admin Courses**NHSA 616. Nursing Financial Management. 3 Hours.**

Nurse leaders play an important role in managing the financial responsibilities for providing high quality care. This course explores health care economics and health care policy as it applies to access, costs, and quality, current and future mechanisms for financing health care services, and organization and unit level budgeting principles. Content will include creating, monitoring, and analyzing a budget, interpreting financial information, and capital budgeting. Corequisite: NHSA 617L.

NHSA 617L. Nursing Financial Management Practicum. 2-3 Hours.

This course provides a practical base for students to apply financial concepts in a health care organization. Students will work with healthcare administrators to create, monitor, and/or analyze budgets, examine revenue cycle for opportunities for improvement, and develop a business case for a new product or service. Students arrange their own clinical site(s) with assistance/approval from clinical faculty.

NHSA 618. Human Resource Management. 3 Hours.

This course provides a theoretical basis for students to learn and apply human resources and organizational concepts, theories, and behaviors. The course will facilitate the individual growth and development of the nurse leader. Content includes human resource management issues; recruitment and retention; staff development; roles clarification; leadership development and succession planning; teamwork and collaborative practice; conflict management; performance management; cultural competence and the work environment; personnel policies, standards, and laws; and decision making and governance models. Students will begin developing a professional portfolio. Successful completion of field experience is required.

NHSA 620. Nursing and Health Systems Administration I. 3 Hours.

This course provides a theoretical base for students to develop the role of nursing and health systems administrator at the unit level. Emphasis is placed on the development of the knowledge and skills necessary for implementing the management role. Students will develop specific administrative competencies to include the ability to: understand self and others, communicate effectively, develop subordinates, manage conflict, monitor personal and individual performance, manage projects, delegate effectively, manage time and stress, foster a productive work environment, live with change, and build and maintain a power base. Content builds on the theoretical foundations of leadership, organizational behavior, and capital management applied to the structure of nursing and health organizations, patient care delivery and classification systems, staffing, budgeting, quality standards and improvement, risk management, leadership development, strategic planning, and change management. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of beginning nurse manager. Prereq: Admission to the Nursing and Health Systems Administration option.

Prerequisites: NUR 601 [Min Grade: B] and (MBA 609 [Min Grade: C] or HCO 615 [Min Grade: C]) and (MBA 632 [Min Grade: C] or HA 631 [Min Grade: C]) and NUR 602 [Min Grade: C]

NHSA 621. Nursing and Health Systems Administration II. 2,4 Hours.

This course provides a theoretical and experiential base for students to develop and implement the role of nursing and health systems administrator at the division/ department level. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming the middle management role. Students will develop specific administrative competencies to include the ability to manage collective performance, design and organize projects, negotiate agreement and commitment, and create change. Content includes analysis of administrative roles and functions, strategies for coordination of quality care within and across departments and systems, strategies for service as an expert resource, business planning, cost and productivity, redesigning practice to achieve goals, models of practice and service delivery, utilization of consultants, managing product/service lines, and utilization of research for improving nursing processes and patient care outcomes. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of mid-level manager. Prerequisite: NHSA 620. Corequisite: NHSA 685L.

Prerequisites: NHSA 620 [Min Grade: B]

NHSA 622. Nursing and Health Systems Administration III. 2 Hours.

This course continues to provide a theoretical and experiential base for students to develop and implement the role of nursing and health systems administrator at the executive level. Through seminar discussion and with an executive level preceptor, emphasis is placed on the application, synthesis, and integration of knowledge and skills necessary for effective and efficient management of human and material resources, while incorporating the ethical, social, legal, financial, and economic aspects of health care delivery, health policy, and regulatory requirements for both staff and the organization. Students will develop specific administrative competencies to include the ability to manage organizational performance, manage across functions, present ideas, think creatively, and develop a vision, mission, strategic plan, and set goals. Content includes health care regulation and policy, practice plans and financing, internal and external environmental influences on nursing and health care systems, information system development and management, quality improvement, and managed care systems. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of chief nurse executive. Prerequisite: NHSA 621 and NHSA 685L. Corequisite: NHSA 686L.

Prerequisites: NHSA 621 [Min Grade: B]

NHSA 630. Health Services Marketing Management. 3 Hours.

The redesign of healthcare organizations has mandated larger spans of control for nurse managers with expertise and leadership skills in organizational, human resource, and financial management. The need for the integration of clinical skills with business know-how has been fueled by a more diverse work force with direct responsibility for non-nursing staff, an increased emphasis on customer service and risk management, and the ability to design and implement care delivery models that extend beyond the walls of the organization into the community and its stakeholders. Health systems across the country (and internationally), including home health agencies, managed care entities, public and private sector hospitals, long-term and ambulatory care facilities, and insurance companies, are searching for advanced level nurses for management and executive level positions.

NHSA 631. Advanced Quality and Patient Safety. 3-4 Hours.

This course examines current issues in quality improvement and patient safety activities. The course includes a review of past and current efforts, tools, and theories of quality assessment, assurance, utilization management, and measuring and improving outcome. In addition, the course looks at new initiatives to improve quality and safety through regulation, reporting and financial incentives.

NHSA 632. Nursing and Health Systems Administration I. 2-4 Hours.

This course provides a theoretical base for students to develop the role of nursing and health systems administrator. Emphasis is placed on development of knowledge and skills necessary for implementing the management role. Students will develop specific administrative competencies to include the ability to: understand self and others; communicate effectively, develop subordinates, manage conflict, monitor personal, individual, and team performance, manage projects, delegate effectively, manage time and stress, foster a productive work environment, live with change, and build and maintain a power base. Content builds on the theoretical foundations of leadership, organizational behavior, financial management, patient care delivery, quality standards and improvement, risk management, leadership development, and change management. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is for entry and mid-level nurse leaders. Prerequisite: Admission to the Nursing and Health Systems Administration option.

Prerequisites: NHSA 616 [Min Grade: B] and NHSA 617L [Min Grade: P] and NHSA 618 [Min Grade: B] and NHSA 631 [Min Grade: B] and NHSA 681L [Min Grade: P]

NHSA 633. Nursing and Health Systems Administration II. 3-4 Hours.

This course offers a theoretical base for students to develop and implement the role of nursing and health systems administrator at the service line/division or higher level. Emphasis is on the synthesis of knowledge and skills from multiple disciplines including nursing and business necessary when assuming a mid-level to senior level leadership role. A primary focus of this course is to develop the nurse leader as an expert to influence patient care, systems and community outcomes in a variety of settings such as ambulatory clinics, long-term care, acute care, community, managed care and policy-making. Content includes strategic management, health care policy and regulation, internal and external environmental assessments, disaster preparedness, and organizational and professional accountability. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is mid-level to senior level leadership roles. Prerequisite: NHSA 632 and NHSA 682L. Corequisite: NSHA 683L.

Prerequisites: NHSA 632 [Min Grade: B] and NHSA 682L [Min Grade: P]

NHSA 640. Economics for Nursing. 3 Hours.

Nurses care for people and caring is the central concept of modern nursing. Yet caring takes many forms, including caring about the economics of services provided. Changes in payment systems, organizational structure and the U.S. healthcare market have led to new interests in the economics of care delivery. Nurses play a major role in this care delivery, as clinicians, administrators and scholars. Topics for the completely on-line course include a basic introduction to economics as it applies to nursing, the nursing labor and service markets and critical professional economic issues facing nursing today.

NHSA 681L. Advanced Quality and Patient Safety Practicum. 2-3 Hours.

This course provides an experiential base for students to develop and implement the role of nursing and health systems quality and outcomes manager within a healthcare organization. Students will analyze outcomes measurement and quality improvement in a health care setting from a strategic perspective and engage, as leaders and participants, in efforts to improve the quality of health services. Students arrange their own clinical sites with assistance/approval from clinical faculty. Co-requisite: NHSA 631Q Advanced Quality and Patient Safety.

NHSA 682L. Nursing and Health Systems Administration I Practicum. 2 Hours.

This course is the third of four required practicum courses for the nursing and health systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Students will arrange their own clinical site(s) with assistance/approval from clinical faculty. Co-requisite: NHSA 632Q Nursing and Health Services Administration I. Prerequisite: NHSA 616, NHSA 617L, NHSA 618, NHSA 631 and NHSA 681L. Corequisite: NHSA 632.

Prerequisites: NHSA 616 [Min Grade: B] and NHSA 617L [Min Grade: P] and NHSA 618 [Min Grade: B] and NHSA 631 [Min Grade: B] and NHSA 681L [Min Grade: P]

NHSA 683L. Nursing and Health Systems Administration II Practicum. 3 Hours.

This course is the last of four practicum courses for the nursing and health-systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming a mid- or senior level management/leadership role. Students will arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NHSA 632 and NHSA 682L. Corequisite: NHSA 633.

Prerequisites: NHSA 632 [Min Grade: B] and NHSA 682L [Min Grade: P]

NHSA 685L. Nursing and Health Systems Administration Practicum I. 1-2 Hour.

This course is the first of two required application courses for the nursing and health-systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NHSA 620. Corequisite: NHSA 621.

Prerequisites: NHSA 620 [Min Grade: B]

NHSA 686L. Nursing and Health Systems Administration/Quality Management Practicum II. 4 Hours.

Nursing and Health Systems Administration/Quality and Outcomes Management in Health Systems: This course provides an experimental base for students to develop and implement the role of nursing and health systems administrator and quality and outcomes manager at the executive level. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming a management and leadership role. Students will analyze outcomes measurement and quality improvement in a health care setting from a strategic perspective and engage, as leaders and participants, in efforts to improve the quality of health services. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NHSA 621 and NHSA 685L. Corequisite: NHSA 622.

Prerequisites: NHSA 621 [Min Grade: B] and NHSA 685L [Min Grade: P]

NHV - Nursing - HIV/AIDS Care Courses**NHV 631. Advanced HIV/AIDS Care Nursing I. 5 Hours.**

This course provides a theoretical and practical foundation for students to diagnose and manage the health needs of the HIV/AIDS care patient and family in the delivery of culturally competent care across the life span. Content includes multidisciplinary management strategies to holistic healthcare delivery as it applies to administration of culturally competent HIV/AIDS care. This course will utilize discussion, online activities for application of class content, readings, lecture and guest lecture approach to supplement text readings and online delivery of didactic content. Student/teacher/class communication will occur through email, chat room, WebCT bulletin board postings, telephone, fax and postal service. The students are expected to apply culturally competent and palliative care theories to clinical assessment and decision-making strategies in order to provide direct patient care to the HIV/AIDS care patient and family. Critical thinking, research, ethics, cultural competence, disease management, complication prevention and healthcare delivery will be employed as it applies to chronic disease management and quality of life for the HIV/AIDS patient and family. Throughout this course students will apply concepts and theory to view the patient and family as bio-psycho-socio-cultural beings who are adapting and evolving to an ever-changing internal and external environment.

Prerequisites: (NUR 612 [Min Grade: B] and NUR 613 [Min Grade: B]) or NUR 614 [Min Grade: B]

NHV 632. Advanced HIV/AIDS Care Nursing II. 4 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for patients with commonly occurring HIV/AIDS care problems. Students will also have the opportunity to develop strategies to market the advanced practice nurse role, to create a specific practice position, and to explore strategies to market their role in health care. The following elements are integrated into the course: critical thinking, health promotion, disease prevention, and HIV/AIDS care, scientific integrity and ethics, human diversity and social issues, and professional role development.

Prerequisites: NHV 631 [Min Grade: B] or NHV 631 [Min Grade: B]

NHV 685L. Practicum I: Advanced HIV/AIDS Care. 3 Hours.

NHV 685L allows the student to develop the Advanced HIV/AIDS Care role by providing health and palliative care services to clients across the lifespan, families, and groups while emphasizing the promotion of health, the prevention of disease and the palliative care for life altering conditions throughout the course of clinical experiences over two academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant.

NMD - Nursing - Diabetes Mnmgt Courses**NMD 621. Advanced Management of Diabetes I. 3 Hours.**

A variety of management strategies will be presented from multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals is an important theme throughout this course as are the current controversies, issues, and research findings underlying present approaches to treatment and patient/family education. Topics presented are based on the curriculum blueprint of the American Diabetes Educators Program recommendations for the ANCC/AADE Advanced Diabetes Management certification examination for clinical nurse specialist and/or nurse practitioners. The topics addressed in this course include: recognition of early signs of diabetes mellitus, self glucose monitoring, diabetes among: minorities, and those residing in rural settings. Pre-req: NUR 600, NUR 614, NCA 621 and NCA 685L or equivalent or ANCC certification as a Nurse Practitioner.

NMD 622. Advanced Management of Diabetes II. 3 Hours.

This online course is the second in a program of study focusing on advanced diabetes management across the lifespan. Two didactic and three clinical courses are offered that will provide a multi-disciplinary framework for the identification of those at risk for or who already possess the metabolic syndrome, prediabetes, frank type 1 or 2 diabetes mellitus and/or the associated complications. A variety of management strategies will be presented from multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals is an important theme throughout this course as are the current controversies, issues, and research findings underlying present approaches to treatment and patient/family education. Topics presented are based on the curriculum blueprint of the American Diabetes Educators Program recommendations for the ANCC/AADE Advanced Diabetes Management certification examination for clinical nurse specialist and/or nurse practitioners. Topics presented will be based on the curriculum of the American Diabetes Educators Program recommendations for the Certified Diabetes Educator. These topics include: family planning, gestational diabetes, poly cystic ovarian syndrome (PCOS), orthopedic sequelae of diabetes, transplantation, glucose monitoring, insulin pump and other advanced diabetes technologies, diabetes in: rural minorities, elderly, children; diabetes in persons with disabilities, insurance issues, cultural issues, economic issues, mood disorders, eating disorders, hypoglycemia, pain management, foot care, risks of ESRD, hypertension, obesity, dental concerns and provider reimbursement issues regarding diabetes education services. Prerequisite: NMD 621 and NMD 685L or ANCC certification as a nurse practitioner.

Prerequisites: NMD 621 [Min Grade: B] or NMD 621 [Min Grade: B]

NMD 685L. Practicum I: Advanced Management of Diabetes. 3 Hours.

NMD 685L allows the student to begin the development of the Advanced Diabetes Management role by providing health care services to clients across the lifespan (i.e., individuals, families, groups) in a variety of settings and emphasizing the promotion of health and the prevention of disease. Further, the student applies knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and awareness of social and professional issues. The advanced practice role emphasis in this course begins the trajectory of the NP experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, teacher, manager, researcher, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Corequisite: NMD 621.

NMT-Nuclear Medicine Tech Courses**NNE-Nursing - Neonatal Courses****NNE 613. Neonatal Pharmacology and Therapeutics. 3 Hours.**

This course focuses on the analysis and utilization of principles of pharmacology and pharmacokinetics for the purpose of planning, implementing, and evaluating therapeutic pharmacological interventions within the specified population. The unique characteristics of the neonatal population, related to therapeutic needs, as well as drug absorption, metabolism and excretion are defined.

NNE 614L. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 4 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking, procedures and skills, and diagnostic reasoning for conducting health assessments and planning care for wholistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity and social issues. Pre or Corequisite: NUR 612.

Prerequisites: NUR 612 [Min Grade: B](Can be taken Concurrently) or NUR 612 [Min Grade: B](Can be taken Concurrently)

NNE 621. Advanced Neonatal Nursing I. 3-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to neonates, infants, and young toddlers up to two years of age.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NNE 622. Advanced Neonatal Nursing II. 4-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of neonates, infants, and young toddlers up to the age of two. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to neonates, infants, and young toddlers up to the age of two.

Prerequisites: (NNE 621 [Min Grade: B] or NNE 621 [Min Grade: B]) and (NNE 684L [Min Grade: P] or NNE 684L [Min Grade: P])

NNE 623. Advanced Neonatal Nursing III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to neonates, infants, and young toddlers up to the age of two. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NNE 622 [Min Grade: B](NNE 622 [Min Grade: B] or NNE 622 [Min Grade: B]) and (NNE 685L [Min Grade: P] or NNE 685L [Min Grade: P])

NNE 684L. Practicum I: Neonatal Nurse Practitioner. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to neonates, infants, and young toddlers up to the age of two. The focus of this course is on the delivery of health care services to neonates, infants, and young toddlers up to the age of two. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NNE 685L. Practicum II: Neonatal Nurse Practitioner. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to neonates, infants, and toddlers up to the age of two. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for neonates, infants, and toddlers up to the age of two. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NNE 621 [Min Grade: B] or NNE 621 [Min Grade: B]) and (NNE 684L [Min Grade: P] or NNE 684L [Min Grade: P])

NNE 686L. Practicum III: Neonatal Nurse Practitioner. 1-3 Hour.

This course is the second of two practicum courses that will be followed by a residency. In selected clinical settings, students are expected to integrate the knowledge and competencies gained from foundation courses to begin to further develop the NNP Role. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNE 622 and NNE 685L. Corequisite: NNE 623.

Prerequisites: NNE 622 [Min Grade: B] or NNE 622 [Min Grade: B]

NNE 692L. Residency: Neonatal Nurse Practitioner. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to neonate, infant, and young toddler up to the age of two. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of neonate, infant, and young toddler up to the age of two.

Prerequisites: (NNE 622 [Min Grade: B] or NNE 622 [Min Grade: B]) and (NNE 685L [Min Grade: P] or NNE 685L [Min Grade: P])

NNI-Nursing - Informatics Courses**NNI 621. Conceptual Basis for Informatics Practice. 3 Hours.**

This course is based on the concepts underpinning nursing informatics practice as delineated in the American Nurses Association's Scope and Standards of Nursing Informatics Practice. Students will explore theories of adult education, communication, systems, decision making, human-computer interaction and the concepts of data, information and knowledge. They will have the opportunity to learn how these theories and concepts are utilized in informatics practice. Prerequisite: NUR 643.

Prerequisites: NUR 643 [Min Grade: C](Can be taken Concurrently)

NNI 622. The Information System Life Cycle. 3 Hours.

This offering is designed to be the culminating course of the nursing informatics specialist curriculum. This course ties together all previous course work together in an application based review of the information system life cycle from systems analysis to system evaluation and maintenance. The course is designed to be taken in conjunction with a clinical experience in which the student will be exposed to aspects of the hands on application of course content.

Prerequisites: NUR 643 [Min Grade: C] and NNI 621 [Min Grade: B]

NNI 685L. Nursing Informatics: Practicum I. 2 Hours.

This course provides an experimental base for students to develop and implement the role of the informatics nurse specialist. Emphasis is placed on the synthesis and application of the theories and concepts that provide the basis of informatics practice. Students will develop the ability to collaborate in multidisciplinary groups, identifying areas for the design and implementation of administrative and clinical technological applications. Students will spend 100 hours during the semester working with a clinical informatics specialist in practice. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNI 621.

Prerequisites: NNI 621 [Min Grade: B](Can be taken Concurrently)

NNI 686L. Nursing Informatics: Practicum II. 2 Hours.

This course provides an experimental base for students to develop and implement the role of the informatics nursing specialist at the organizational level. Students will be paired with a nursing informatics specialist working on aspects of system analysis, design, implementation and evaluation. This experience requires the student synthesize knowledge gained in all previous courses in the curriculum. This course includes 100 hours of clinical practice and is designed to function as the clinical capstone to the NNI curriculum. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNI 685L.

Prerequisites: NNI 621 [Min Grade: B]

NNS-Nursing - Neuroscience Courses**NNS 630. Advanced Neuroscience Nursing. 3 Hours.**

This course emphasis is placed on integration of knowledge from the neuroscience and knowledge from general pathophysiology with insights gained through clinical experience. NNS 630 add to student's theoretical base for managing disorders related to episodic and chronic dysfunction of the neurosystem. Emphasis is placed on knowledge of neuroscience underlying the role of the nurse practitioner clinical nurse specialist.

This course is also designed to provide students with opportunities to integrate knowledge of ethical issues and future trends into advanced neuroscience nursing practice.

NOM-Nursing - Outcomes Measure Courses**NOM 611. Creativity, Resources and Problem Solving Tools for Health Care Quality. 2 Hours.**

This course provides an introduction to concepts, theories/schools of thought, and resources in the areas of outcomes measurement and quality management; addresses systems thinking, creativity, and quality/problem solving tools. Admission to the MSN Program or permission for course instructor.

NON-Nursing - Oncology Courses**NON 630. Advanced Adult Oncology Nursing. 3 Hours.**

This course provides a theoretical base for students to diagnose and manage acute oncology health problems of adults. Emphasis is placed on integration of knowledge of pathophysiology, clinical assessment, and nursing and medical management. Taught only if sufficient students indicate interest.

NPA-Nursing - Palliative Care Courses**NPA 626. Palliative Care for Advanced Nursing Practice I. 3 Hours.**

This course provides a theoretical and practical foundation for students to diagnose and manage the health needs of the palliative care patient and family in the delivery of culturally competent care across the life span. Content includes multidisciplinary management strategies to holistic healthcare delivery as it applies to administration of culturally competent palliative care. This course will utilize discussion, online activities for application of class content, readings, lecture and guest lecture approach to supplement text readings and online delivery of didactic content. The students are expected to apply culturally competent and palliative care theories to clinical assessment and decision-making strategies in order to provide direct patient care to the palliative care patient and family. Prerequisite: NUR 614L. Corequisite: NPA 685L.

Prerequisites: NUR 614L [Min Grade: B] and NUR 613 [Min Grade: B] (Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NPA 627. Palliative Care for Advanced Nursing Practice II. 3 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for patients with commonly occurring palliative care problems. Students will also have the opportunity to develop strategies to market the advanced practice nurse role, to create a specific practice position and to explore strategies to market their role in health care. The following elements are integrated into the course: critical thinking, health promotion, disease prevention and palliative care, scientific integrity and ethics, human diversity and social issues and professional role development. Corequisite: NPA 686L.

Prerequisites: (NPA 626 [Min Grade: B] or NPA 626 [Min Grade: B])

NPA 685L. Practicum: Palliative Care for Advanced Nursing Practice I. 3 Hours.

This course allows the student to develop the Culturally Competent Palliative Care Nurse Practitioner role by providing health and palliative care services to clients across the lifespan, families and groups while emphasizing the promotion of health, the prevention of disease and the palliative care for life altering conditions throughout the course of clinical experiences over two academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. Corequisite: NPA 626.

Prerequisites: NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B]

NPA 686L. Practicum: Culturally Competent Palliative Care Nurse Practitioner II. 3 Hours.

This course allows the student to develop the Culturally Competent Palliative Care Nurse Practitioner role by providing health and palliative care services to clients across the lifespan, families and groups while emphasizing the promotion of health, the prevention of disease and palliative care for life altering conditions throughout the course of clinical experiences over two academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course, NCA 692L. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPA 621 and NPA 685L. Corequisite: NPA 622.

Prerequisites: NPA 685L [Min Grade: P] or NPA 685L [Min Grade: P]

NPA 692L. Residency: Culturally Competent Palliative Care Nurse Practitioner. 3-6 Hours.

This course prepares the student in the Culturally Competent Palliative Care Nurse Practitioner role to be a beginning expert in the diagnosis and management of client's health problems. During residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the culturally competent care of clients from across the lifespan. The student further develops the Palliative Care Nurse Practitioner role with patient/clients by providing health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health, prevention of disease and/or palliation of symptoms of life-altering diseases. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPA 622 and NPA 686L.

Prerequisites: (NPA 627 [Min Grade: B] or NPA 627 [Min Grade: B]) and (NPA 685L [Min Grade: P] or NPA 685L [Min Grade: P]) and (NPA 686L [Min Grade: P] or NPA 686L [Min Grade: P])

NPE-Nursing - Pediatrics Courses**NPE 613. Primary Care Pediatric Pharmacology. 1 Hour.**

This course is a supplement course for Primary Care Practitioner students to provide them with information necessary to safely and competently prescribe medications for infants, children and adolescents. It complements the information provided in NUR 613 Pharmacology and Therapeutics but focuses on the unique physiologic and metabolic characteristics of this population. Pre or corequisite: NUR 613.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NPE 621. Nurse Practitioner Pediatric Primary Care I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to primary care pediatric patients and their families.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NPE 622. Nurse Practitioner Pediatric Primary Care II. 2-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of primary care pediatric patients and their families. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to primary care pediatric patients and their families.

Prerequisites: (NPE 621 [Min Grade: B] or NPE 621 [Min Grade: B]) and (NPE 685L [Min Grade: P] or NPE 685L [Min Grade: P])

NPE 623. Nurse Practitioner Pediatric Primary Care III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to primary care pediatric patients and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NPE 622 [Min Grade: B] or NPE 622 [Min Grade: B]) and (NPE 686L [Min Grade: P] or NPE 686L [Min Grade: P])

NPE 685L. Practicum I: Nurse Practitioner Pediatric Primary Care. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to primary care pediatric patients and their families. The focus of this course is on the delivery of health care services to primary care pediatric patients and their families. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NPE 686L. Practicum II: Nurse Practitioner Pediatric Primary Care. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to primary care pediatric patients and their families. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for primary care pediatric patients and their families. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NPE 621 [Min Grade: B] or NPE 621 [Min Grade: B]) and (NPE 685L [Min Grade: P] or NPE 685L [Min Grade: P])

NPE 687L. Practicum III: Primary Care Pediatric Nurse Practitioner. 2 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles. Prerequisite: NPE 622 and NPE 686L. Corequisite: NPE 623.

Prerequisites: (NPE 622 [Min Grade: B] and NPE 686L [Min Grade: P]) or (NPE 622 [Min Grade: B] and NPE 686L [Min Grade: P])

NPE 692L. Practicum III: Nurse Practitioner Pediatric Primary Care Residency. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to primary care pediatric patients and their families. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of primary care pediatric patients and their families.

Prerequisites: (NPE 622 [Min Grade: B] or NPE 622 [Min Grade: B]) and (NPE 686L [Min Grade: P] or NPE 686L [Min Grade: P])

NPN-Psyc Mental Hlth Nur Prac Courses**NPN 613. Psychopharmacology for Advanced Practice Nursing. 3 Hours.**

This course will provide advanced knowledge of psychobiological information in conjunction with the use of psychopharmacological interventions with patients. This course will focus on the pharmacokinetics and clinical management including prescription of medications for psychiatric disorders. Prerequisite: NUR 613, NPN 621 and NPN 685L.

Prerequisites: (NUR 613 [Min Grade: B] and NPN 621 [Min Grade: B] and NPN 685L [Min Grade: P]) or (NUR 613 [Min Grade: B] and NPN 621 [Min Grade: B] and NPN 685L [Min Grade: P])

NPN 621. Advanced Psychiatric Nursing I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice psychiatric nursing. The focus of this course is to prepare the student to implement the role of the Psychiatric Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to a psychiatric population across the lifespan.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NPN 622. Advanced Psychiatric Nursing II. 3-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of psychiatric patients across the lifespan. The focus of this course is on health promotion and disease prevention and management strategies for psychiatric patients from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to psychiatric patients across the lifespan.

Prerequisites: (NPN 621 [Min Grade: B] or NPN 621 [Min Grade: B]) and (NPN 685L [Min Grade: P] or NPN 685L [Min Grade: P])

NPN 623. Advanced Psychiatric Nursing III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice psychiatric nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to psychiatric patients across the lifespan. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health in psychiatric patients across the lifespan.

Prerequisites: (NPN 622 [Min Grade: B] or NPN 622 [Min Grade: B]) and (NPN 686L [Min Grade: P] or NPN 686L [Min Grade: P])

NPN 685L. Practicum I: Psychiatric Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to psychiatric and substance use patients across the lifespan. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for psychiatric patients across the lifespan. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NPN 686L. Practicum II: Psychiatric Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to psychiatric patients across the lifespan. The focus of this course is on the delivery of health care services to psychiatric patients across the lifespan. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NPN 621 [Min Grade: B] or NPN 621 [Min Grade: B]) and (NPN 685L [Min Grade: P] or NPN 685L [Min Grade: P])

NPN 692L. Residency: Psychiatric Nurse Practitioner. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to psychiatric patients across the lifespan. The focus of this course is to evaluate progress toward achievement of professional competencies in advanced practice psychiatric nursing. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of psychiatric patients across the lifespan.

Prerequisites: (NPN 622 [Min Grade: B] or NPN 622 [Min Grade: B]) and (NPN 686L [Min Grade: B] or NPN 686L [Min Grade: B])

NPP- NUR - Pediatric Pulmonary Courses**NPP 685. Interdisciplinary Pediatric Pulmonary Care I. 3 Hours.**

This course provides the trainee with the opportunity to analyze ideas, concepts and theories relative to the delivery of healthcare to pediatric pulmonary patients. Emphasis will be focused on the acquisition of in-depth knowledge of all aspects of the well child. Chronic respiratory disease is presented as the model to demonstrate the effects of chronic illness of the child and family. Trainees are introduced to basic respiratory anatomy and physiology, diagnostic procedures and various treatment modalities. Throughout the term, trainees will be expected to apply the knowledge and skills acquired to selected clinical assignments.

NPP 686. Interdisciplinary Pediatric Pulmonary Care II. 3 Hours.

NPP 686 provides the trainee with the opportunity to analyze ideas, concepts and theories relative to the delivery of healthcare to pediatric pulmonary patients. Emphasis will be focused on the acquisition for in-depth knowledge of all aspects of the well child. Chronic respiratory disease is presented as the model to demonstrate the effects of chronic illness on the child and family. Trainees are introduced to basic respiratory anatomy and physiology, diagnostic procedures and various treatment modalities. Throughout the term, trainees will be expected to apply the knowledge and skills acquired to selected clinical assignments.

NPR-NUR Promo/Protect/Rest Hlt Courses

NPR 760. Conceptual Foundations for Promoting, Protecting, and Restoring Health. 3 Hours.

This course will be focused on theories, concepts and research related to promoting, protecting and restoring health. Students are expected to analyze cultural, social, racial and gender influences on health and research related to health promotion, protection and restoration.

NPR 761. Interventions to Promote, Protect, and Restore Health. 3 Hours.

This course will be focused on in-depth exploration and critical analysis of current intervention research including conceptual and methodological issues. In addition, the course will be focused on designing research to evaluate the outcomes of interventions designed to promote, protect or restore health on individuals or community groups.

NRM-Nursing - Research Methods Courses

NRM 752. Responsible Conduct of Research. 2 Hours.

This course will examine a wide range of historical and modern treatises that have shaped ethical practices and medical ethical theories both in the United States and globally. The course will emphasize comparing and contrasting various world views of ethical research practice from a cultural and global perspective. The content will focus on ethical principles such as respect for persons, autonomy, justice and rights-based codes. In addition, the expectations and regulations of Institutional Review Boards will be examined with an emphasis on developing effective strategies to expedite approval of student research applications. In addition, students will complete and provide proof of current completion of the UAB IRB training course as an initial pass/fail learning activity. This course will also include integration of the following elements and/or activities: critical thinking, informatics, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, human diversity, cultural competence, global concerns and health disparity issues. The advanced role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field.

NRM 770. Designs for Nursing Studies I. 3 Hours.

Designs For Nursing Studies I. In this course, special emphasis is placed upon the beginning phases of the research process, including formulation of research questions/aims, integration of theory and/or conceptual framework in the development of research, the critique and review of knowledge that support an identified area of research, and the discussion of the type of research design. Cultural implications and ethical standards for research will be addressed.

NRM 771. Methods/Measurement In Nursing Research. 3 Hours.

Instrumentation in nursing research involves measurement of biological, psychological and/or sociological aspects of human systems. This course is an overview of the theories, principles and techniques that yield reliable and valid measurement of human systems. Opportunities will be provided to evaluate the psychometric properties of selected measures and strategies. This course is designed to aid the student in writing the measurement section of a research proposal in the focal area. 999999.

NRM 772. Designs of Nursing Studies II. 3 Hours.

Designs for Nursing Studies II. This course focuses on sampling, collection of data, data analysis plans, presentation of findings, conclusions in various research designs and the reintegration of the findings into the body of knowledge in an identified area of research. Ethical and cultural issues related to the conduct of research will be addressed. Students will develop a research proposal.

NRM 773. Qualitative Research Methods. 4 Hours.

This core course focuses on sampling, design, analysis plans, presentation of results, findings, and conclusions in various research designs and the reintegration of the findings into the body of knowledge in an identified area of research. Ethical and cultural issues related to the conduct of research are also examined.

NRM 774. Designs and Methods for Research of Vulnerable Populations With Health Disparities. 3 Hours.

This course is designed for doctoral level students in nursing and other health-related disciplines. Special emphasis is placed on critical analysis of health disparities research, and the integration of theory and empirical evidence in designing studies of vulnerable populations such as minorities and other underserved populations. Issues of race, gender, age, ethnicity, social class and cultures are examined in relation to research design and successful implementation of research studies. Intervention approaches commonly used in health disparities research will be evaluated and ethical issues of relevance to vulnerable populations will be explored.

NRM 777. Mixed Methods Research I: Introduction to the Field. 3 Hours.

The course will provide students with an introduction to the field of mixed methods research. The course will focus on understanding what constitutes mixed methods research, its fundamental principles, and the main trends, issues, and debates involved in the application of this research approach. Students will examine the process of mixed methods research, including its definition, rationale for using it, the key characteristics, major design applications, and means of assessing the quality of mixed methods inferences. In addition, students will learn how the mixed methods research process is shaped by personal, interpersonal, and social contexts and how mixed methods intersects with other quantitative and qualitative research approaches and designs.

Prerequisites: (NRM 750 [Min Grade: B] or NRM 750 [Min Grade: B]) and (NRM 773 [Min Grade: B] or NRM 773 [Min Grade: B])

NS-Natural Sciences/Math Courses

NST- NUR - Statistical Methods Courses

NST 772. Data Mining and Statistical Learning I. 3 Hours.

NST 772 is an elective course for PhD students. This is the first course in a two-course series that provides further exposition of advanced statistical analysis and data mining techniques for students interested in doing research that involves considerable quantitative analysis in their dissertation and/or future professional work.

NST 773. Data Mining/Stats Learning II. 3 Hours.

NST 773 is an elective course for PhD students. This is the second course in a two-course series that provides further exposition of advanced statistical analysis and data mining techniques for students interested in doing research that involves considerable quantitative analysis in their dissertation and/or future professional work.

Prerequisites: NST 772 [Min Grade: B] or NST 772 [Min Grade: B]

NST 775. Introduction to Statistical Software Packages: SPSS and SAS. 2 Hours.

Special emphasis of this laboratory course will be on the use of the statistical packages, SAS and SPSS, in the creation of the data files, data entry, manipulation of data, descriptive analysis and selected statistical techniques.

NST 776. Linear Models For Clinical Nursing Research. 3 Hours.

Linear Models For Clinical Nursing Research. This course is designed as a survey course on the application of advanced General Linear Model and related techniques in health care research. The course will focus on application to research questions of importance to nursing, with an emphasis on practice-related problems.

NST 777. Multivariate Statistical Methods For Clinical Nursing Research. 3 Hours.

Multivariate Methods For Clinical Nursing Research. This course is designed as a survey course on the application of multivariate techniques in health care research. The course will focus on application of multivariate statistical methods to nursing-related research questions, with emphasis on interpretation within clinical nursing research problems.

NST 778. Data Management. 2 Hours.

A hands-on exposure to data management with common statistical software packages, including concepts of types of variables, data entry and cleaning, importing and converting datasets, merging and concatenating datasets, sorting, sub-setting, and producing reports and descriptive statistics.

NTC-Nursing - Teaching Courses**NTC 650. Instructional Strategies For Teaching in Nursing. 3 Hours.**

This course is required for students in the Teacher in Nursing Certificate program and maybe chosen as an elective course by other graduate students. The content is general and applicable to a variety of teaching situations and learners. The course is an introduction to a systematic approach to developing and implementing adult learning experiences. This course emphasizes the application of a systematic approach (assessing, planning, implementing, and evaluating) to the design of an educational unit. The focus will be on assessing learning needs, identifying learning objectives, selection of resources, and development of teaching strategies for different learner populations.

NTC 652. Program and Curriculum Development. 3 Hours.

This course is a required for students in the Teaching Nursing Certificate program and may be chosen as an elective course by other graduate students. The content is general and applicable to course, educational program, and/or curriculum development. The course is an introduction to the educational development process. This course emphasizes the basic components of program/curriculum development, philosophy, goals, planning learning experiences, implementing learning experiences, and evaluation of the curriculum or an educational program. The focus is on an understanding of program/curriculum determinants (learning, knowledge, man, society) and their impact on curriculum and educational program planning. The impact of philosophy, organizing framework, goals, learning experiences, and evaluation on curricular and program design and development will be discussed.

NTC 654. Evaluation of Instruction in Nursing. 3 Hours.

This course is a required for students in the Teacher in Nursing Certificate program and may be chosen as an elective course by other graduate students. The content is general and applicable to a variety of health related educational settings and learners. This course is an introduction to educational testing and measurement, teaching effectiveness, and clinical performance appraisal. This course provides an overview of evaluation techniques that enable nurses to plan and implement a variety of education related evaluation approaches, including test construction, item analysis, teaching effectiveness, and clinical performance appraisals. Emphasis will be placed on classroom and clinical evaluation of learning and on the use of technology for evaluation purposes. Prereq: Admission to Graduate Studies in the School of Nursing or as a non-degree post-baccalaureate student or by permission of instructor; knowledge of statistics and writing measurable educational objectives in the domains of knowledge, skills, and attitudes.

NTC 656. WebCT for Instructors and Designers. 3 Hours.

Provides students with an advanced level of skill and knowledge of WebCT. Students are introduced to WebCT tools in a sequence that will permit development of a new course using WebCT as a learning management system. This course is offered only when sufficient interest by students is generated.

NTC 658. Simulation and Classroom Technologies for Student Learning. 2 Hours.

Designed to introduce graduate nursing students to the use of technology and simulation in nursing education. Students will be introduced to simulation as an educational strategy addressing issues related to the development implementation and evaluation of simulations. The use of technology available to enhance the educational environment will also be explored. Students will analyze advantages and disadvantages of various technologies and determine appropriate application of these technologies.

NTC 660. Foundations of Evidence-Based Nursing Education. 3 Hours.

Designed to prepare graduate nursing students to understand the concepts fundamental to nursing education. Students will be expected to analyze the effects of student and faculty diversity, legal and ethical issues, evidence-based practice on nursing education.

NTC 683L. Teaching Practicum in Nursing. 1-3 Hour.

This course is a required practicum for students in the Teacher in Nursing Certificate program and may be taken as an elective course by other graduate students who are concurrently enrolled in one or more NTC courses. The practicum provides an opportunity for students to concurrently or retrospectively implement the knowledge and skills acquired in NTC 650, NTC 652, and NTC 654 to selected teaching (classroom and clinical) situations. This course provides opportunities for students to integrate previously or concurrently acquired knowledge concerning teaching, curriculum, and/or evaluation into selected classroom and clinical situations. This practicum course allows students to assume limited responsibilities in classroom and clinical teaching while under the guidance of an instructor and/or preceptor. Students will be expected to meet all the course objectives upon completion of the three credit hour practicum. The practicum should involve both didactic and clinical teaching. Students arrange their own clinical sites with assistance/ approval from clinical faculty. Prerequisite: Admission to Graduate Studies in the School of Nursing or as a non-degree post-baccalaureate student. Prerequisite: NTC 650, NTC 652, and NTC 654.

Prerequisites: (NTC 650 [Min Grade: C] and NTC 652 [Min Grade: C] and NTC 654 [Min Grade: C]) or (NTC 650 [Min Grade: C] and NTC 652 [Min Grade: C] and NTC 654 [Min Grade: C])

NTC 692L. Residency: Nurse Educator. 3-6 Hours.

A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NTC 650, NTC 652 and NTC 654.

Prerequisites: (NTC 650 [Min Grade: B] or NTC 650 [Min Grade: B]) and (NTC 652 [Min Grade: B] or NTC 652 [Min Grade: B]) and (NTC 654 [Min Grade: B] or NTC 654 [Min Grade: B])

NTC 760. Transitions to Academic Nursing Education. 3 Hours.

This course provides content relevant to the role of the nurse educator in an academic setting. The course includes information on nurse educator competencies, trends in higher education, the nature of our students in the 21st century, and strategies for building a successful nurse-educator career, including building collegial relationships and integrating the teaching, research, and service missions of the university into one position. This course may be included in a program of study as an elective, or taken as a non-degree student. NTC 760 may also be taken by students in the Nurse Educator track in the MSN program.

NTR-Nutrition Sciences Courses**NTR 579. Obesity in the 21st Century. 3 Hours.**

Overview of the facts and research findings underlying the understanding of obesity, its co morbidities, and its consequences in the population.

NTR 589. Internship Practicum. 1-12 Hour.

Clinical experience in food service management and nutritional care in facilities throughout community; specific objectives vary depending on rotation.

NTR 601. Advanced Medical Nutrition. 3 Hours.

Roles of nutrition in relationship to health; prevention of disease and correction of disorders due to nutritional imbalance throughout life cycle; disease states and their nutritional management; biochemical, clinical, and dietary assessment of nutritional status; drug-nutrient interactions; inborn errors of metabolism.

NTR 604. Principles and Practice of Nutrition Support. 3 Hours.

Critical review of current methods of providing nutrition support for critically ill patients; theory integrated with clinical practice.

NTR 611. Advanced Food Service Systems Management. 3 Hours.

Management systems and their application to hospital food service; legal aspects of dietetic practice; quality assurance, departmental planning, and organization.

NTR 612. Research and Technology Applications in Dietetics. 3 Hours.

Utilization of internet technology and research design in dietetics practice.

NTR 618. Nutritional Biochemistry. 6 Hours.

Metabolism and function of nutrients; biosynthesis of vitamins and their cofactors; human requirements for energy, amino acids, minerals, and vitamins; current human nutritional problems.

NTR 622. Recent Advances In Nutrition Cancer Research. 3 Hours.

Critical evaluation of effects of genetics and environmental factors, especially nutrients, on development and prevention of obesity, atherosclerosis and cancer.

NTR 625. Human Nutr Through the Life Cy. 3 Hours.

This course will examine the role of nutrition and dietary factors on the growth, development, and maintenance of health throughout the human life cycle. Nutritional guidelines/recommendations, special nutritional needs, physiology, and nutritional health concerns for each stage of the human lifecycle beginning with preconception and continuing throughout adulthood and aging will be addressed.

NTR 626. Consumer Issues in Nutrition. 3 Hours.

This course examines contemporary nutritional issues that affect consumers. Focus will be on the translation of science to public policy, consumer communications, and food choices.

NTR 630. Maternal Child Hlth Ped Nutrit. 4 Hours.

Public health and interdisciplinary approach to pediatric and maternal and child nutrition; translation of evidence based approaches to pediatric nutrition, including prevention and intervention.

NTR 631. Community Interventions for Healthy Lifestyles. 3 Hours.

Community-based strategies for promoting healthy lifestyles through improved eating and physical activity behaviors; emphasis on childhood obesity prevention and intervention; integration of the Life Course model.

NTR 633. Laboratory Instruments and Methods in Nutrition Research. 1-3 Hour.

Individualized instruction in theory and use of laboratory instruments specific to a student's research project.

NTR 636. Scientific Methods. 3 Hours.

Approaches for nutrition investigation; design of experiments and research proposals.

NTR 637. Applied Research in Nutrition Sciences. 3 Hours.

Introduction to research methodologies and application of research related to nutrition and dietetics using practical application of qualitative and quantitative research and evaluation methods in community and health-related settings.

Prerequisites: BST 621 [Min Grade: C]

NTR 650. Body Composition and Energy Metabolism. 3 Hours.

Methods of measurement of body composition and energy expenditure and their relationship to health and disease.

NTR 680. Journal Club in Clinical Nutrition. 1 Hour.

Review, discussion, and critique of current literature in clinical nutrition.

NTR 685. Pediatric Pulmonary Care: An Interdisciplinary App. 1-3 Hour.

Theory and practice of interdisciplinary health care delivery to pediatric clients at risk for or compromised by pulmonary disease by team representing medicine, nutrition, nursing, social work, and physical therapy.

NTR 690. Seminar. 1 Hour.

Review of current literature and research in nutrition.

NTR 691. Clinical Practicum: Nutritional Aspects of Mental. 1-6 Hour.

Evaluation of nutritional status, feeding behavior, and food habits of retarded children; nutritional care; functioning in interdisciplinary team; field trips to agencies serving retarded children.

NTR 692. Clinical Practicum: Community Nutrition. 1-6 Hour.

Clinical experiences in health care delivery systems with nutrition components; methods of determining nutritional status of most vulnerable groups; nutrition education of community; current community nutrition issues; food fads, weight control, food misinformation, and nutrition legislation.

NTR 693. Clinical Practicum: Pediatric Nutrition. 1-6 Hour.

Clinical experiences in normal growth patterns in children; nutritional needs in health and disease; medical problems of pediatric patients; diet therapy.

NTR 694. Clinical Practicum: General Clinical Research. 1-6 Hour.

Clinical experiences in a multi-disciplinary research facility involving human subjects.

NTR 695. Special Problems. 1-3 Hour.

Applications in clinical areas; clinical rotations; review of current literature.

NTR 696. Clinical Practicum: Nutr Support of Pediatric Clin. 1-6 Hour.

Observation of and participation in interdisciplinary team delivery of health care to pediatric patients with pulmonary disease; variety of settings utilized, including neonatal intensive care, medical/surgical pediatric acute care, and pediatric pulmonary clinics; emphasis on optimizing nutritional support to pediatric patients with pulmonary dysfunction.

NTR 697. Clinical Practicum: Nutrition Support Service. 3-6 Hours.

Observation of and participation in interdisciplinary team delivery of nutrition support to critically ill hospitalized patients and ambulatory patients.

NTR 698. Master's Level Non-Thesis Research. 1-6 Hour.

Project designed to meet student's particular interest in nutrition and dietetic field; review of current literature; limited research and paper required.

NTR 699. Master's Level Thesis Research. 1-9 Hour.

Projects designed individually to meet student's particular interest within nutrition and dietetic field; emphasis on research approach to problem solving, including review of current literature in topic area.

Prerequisites: GAC M

NTR 701. Advanced Medical Nutrition. 3 Hours.

Role of nutrition and its relationship to health, prevention of disease, and correction of disorders due to nutritional imbalance throughout the life cycle. Emphasis on nutrition assessment and current research, including biochemical clinical, dietary, and anthropometric measurements.

NTR 704. Principles and Practice of Nutrition Support. 3 Hours.

Critical review of current methods of providing nutrition support for critically ill patients; theory integrated with clinical practice.

NTR 708. Nutrition Immunity and Infection. 3 Hours.

Impact of nutrition on immune function and effects of infection on nutritional status.

NTR 711. Clinical Nutrition. 4 Hours.

Nutritional biochemistry, nutrient requirement, sources, toxicities. Nutritional aspects of growth, development, pregnancy, chronic diseases, and the hospitalized patient.

NTR 718. Nutritional Biochemistry. 6 Hours.

Metabolism and function of nutrients; biosynthesis of vitamins and their cofactors; human requirements for energy, amino acids, minerals, and vitamins; current human nutritional problems.

NTR 720. Trace Elements in Human Nutrition I. 2 Hours.**NTR 721. Trace Elements in Human Nutrition II. 2 Hours.****NTR 722. Recent Advances in Nutrition and Cancer Research. 1-3 Hour.**

Review of recent advances in nutrition and cancer research; emphasis on advances in biomarkers of nutritional exposure; modification of cancer risk by gene-nutrient interactions.

NTR 723. Assessment of Nutritional Status in Populations. 3 Hours.

Theoretical and hands-on instruction in methods of assessment of dietary intakes, body composition, and biochemical levels of macro- and micronutrients. Proper techniques for collecting measurements and review of computer software packages that specialize in analysis of specific measurements.

NTR 724. Research Strategies for the Study of Diet, Energetics and Cancer. 2 Hours.

Overview of dietary, physical activity, nutritional status, and body composition assessment as applied to research design and implementation of cancer-related studies in both animals and humans.

NTR 725. Human Nutr Through Life Cycle. 3 Hours.

Nutritional guidelines/recommendations, special nutritional needs, physiology, and nutritional health concerns for each stage of human lifecycle beginning with preconception and continuing throughout adulthood and aging will be addressed.

NTR 726. Consumer Issues in Nutrition. 3 Hours.

This course examines contemporary nutritional issues that affect consumers. Focus will be on the translation of science to public policy, consumer communications, and food choices.

NTR 728. Cancer Prevention and Control Seminar. 1 Hour.

Presentations related to cancer prevention and control and participation on cancer research review boards. Required for pre- and post-doctoral fellows in the NCI-supported R25 Cancer Prevention and Control Training Program.

NTR 733. Laboratory Instruments and Methods in Nutrition Research. 1-3 Hour.

Instruction in theory and use of selected laboratory instruments (selected according to student's need related to research project).

NTR 734. Laboratory Methods in Vitaminology. 3 Hours.

Vitamin determinations in clinical and other specimens: theory; procedures; practical exercises.

NTR 736. Scientific Methods. 3 Hours.

This course is designed to provide the students with the knowledge necessary to plan, design, and undertake research on topics related to nutrition science.

NTR 737. Research Concept Development. 1 Hour.**NTR 738. Human Investigations: Ethics Rights and Regulations. 1 Hour.**

Procedures, regulations, and ethics pertaining to conduct of human investigations, informed consent, human use committees, internal review boards.

NTR 742. Nutritional and Toxicological Aspects of Food Safe. 2 Hours.**NTR 743. Macronutrients. 3 Hours.****NTR 744. Vitamins: Nutritional Clinical and Biochemical A. 2 Hours.****NTR 745. Origin of Cancer: Microenviron. 1 Hour.**

This course is a journal club that will provide insights into the importance of the matrix microenvironment in tumorigenesis. Tumorigenesis is the process by which initiated cells form tumors.

NTR 746. Nutritional Aspects of Aging. 2 Hours.**NTR 747. Molecular Biology and Nutrition Sciences. 3 Hours.**

Overview of molecular biology applications in nutrition science research. Examination of basic molecular biology techniques, current usage of molecular biology to solve nutrition problems, and application of biotechnology to study disorders with nutritional component.

NTR 750. Body Composition and Energy Metabolism. 3 Hours.

Methods of measurement of body composition and energy expenditure and their relationship to health and disease.

NTR 760. Foundations of Nutrition Research. 1 Hour.

NTR 769. Race, Nutrition and Health. 3 Hours.

Introduction to the identification, measurement and exploration of etiological factors that underlie racial/ethnic disparities in health outcomes.

NTR 778. Special Topics in Nutrition Sciences. 1-5 Hour.**NTR 779. Obesity in the 21st Century. 3 Hours.**

General overview of the facts and research findings underlying the understanding of obesity, its co morbidities, and its consequences in the population.

NTR 788. Advanced Nutrition Seminar. 1 Hour.**NTR 789. Diabetes and Energy Metabolism Seminar.. 1 Hour.**

Discussions on the latest research involving energy metabolism issues with diabetes through the presentation and discussion of scientific peer-reviewed articles.

NTR 791. Advanced Clinical Nutrition Diagnosis and Treatments. 4 Hours.

Clinical rounds with nutrition support team; clinical nutrition research procedures related to human nutrition.

NTR 798. Doctoral Level Non-Dissertation Research. 1-15 Hour.**NTR 799. Doctoral Level Dissertation Research. 1-15 Hour.**

Prerequisites: GAC D

NUR-Nursing Courses

NUR 501. Foundations of Professional Nursing. 4 Hours.

This course focuses on the practice of professional nursing as an evidence-based, goal-directed activity for assisting patients to achieve optimal health by meeting basic human needs, providing holistic care, and engaging in health promotion. Concepts of communication, interpersonal relationships, and nursing process as clinical decision-making strategies are introduced. Chronic and long-term internal and external environmental variables that affect the health of adults are explored. The professional roles of caregiver and advocate are developed in diverse learning experiences.

NUR 502L. Foundations of Clinical Practice. 3 Hours.

In this practicum component of Foundations of Professional Nursing, students are guided in the application of content studied in the theoretical portion of the course. Competencies needed by the nurse generalist in the care of adult patients are introduced and practiced. Critical thinking and clinical decision-making skills utilized by the nurse caregiver are emphasized in diverse health care settings.

NUR 503. Nursing Care of Older Adults. 3 Hours.

NUR 503 focuses on the unique needs of older adult patients who require nursing care in a variety of healthcare settings. The older adult as a heterogeneous, holistic person is emphasized in light of current and future health care needs. Concepts of healthy aging and care in the preventive, restorative, acute, and chronic domains are explored. The professional role of the nurse as advocate is developed in diverse learning activities. Prerequisite: NUR 505, NUR 506L, NUR 515 and NUR 516L. Corequisite: NUR 507, NUR 508L, NUR 509, NUR 510L, NUR 517 and NUR 518L.

Prerequisites: NUR 513 [Min Grade: C] and NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P]

NUR 504L. Concepts and Skills for Professional Nursing. 2 Hours.

NUR 504L provides basic nursing skills that will form the foundation for more complex knowledge and skills in subsequent nursing courses. Current nursing trends, legal, ethical (e.g., confidentiality, documentation), quality, safety, and health concepts are reinforced throughout the course. The role of caregiver is presented as an integral part of the health care team. Learning experiences occur in the nursing skills laboratory. Although knowledge and skills in this course are focused on the adult population, many of the concepts are transferable to care of patients across the lifespan. Admission to the School of Nursing is required.

NUR 505. Nursing Care of Adults. 4 Hours.

This course focuses on patients across the adult lifespan who require nursing care in chronic and acute health care settings. Internal and external environmental variables that have implications for interventions that promote risk reduction and health are examined. Emphasis is placed on evidence-based clinical decision-making in promoting health, meeting physiological needs, and providing holistic care during illness and at end of life. The professional roles of the nurse are further developed in increasingly complex learning experiences.

Prerequisites: NUR 512 [Min Grade: C] and NUR 514L [Min Grade: C] and NUR 501 [Min Grade: C] and NUR 504L [Min Grade: C] and NUR 502L [Min Grade: P] and NUR 513 [Min Grade: C]

NUR 506L. Clinical Practice With Adult Patients. 4 Hours.

In this practicum, students apply content learned in the companion theory course, Nursing Care of Adults. Competencies needed by the nurse generalist in the care of adult patients are developed in increasingly complex learning experiences. Critical thinking, clinical decision-making, and leadership skills utilized by the nurse caregiver in a variety of health care settings are emphasized.

Prerequisites: NUR 512 [Min Grade: C] and NUR 514L [Min Grade: C] and NUR 501 [Min Grade: C] and NUR 504L [Min Grade: C] and NUR 502L [Min Grade: P] and NUR 513 [Min Grade: C]

NUR 507. Promoting Healthy Childbearing and Childrearing Families. 3 Hours.

This course focuses on the practice of professional nursing as an evidence-based, goal-directed activity for assisting childbearing and childrearing families to achieve optimal health by meeting basic human needs, providing holistic care, and engaging in health promotion. Concepts of communication, interpersonal relationships, and nursing process as a clinical decision-making strategy are reinforced. Chronic and acute internal and external environmental variables that affect the health of women during pregnancy, neonates, children, and adolescents are explored. The professional roles of caregiver and educator are developed in diverse learning experiences.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 508L. Clinical Practice with Childbearing and Childrearing Families. 3 Hours.

In this practicum, students apply content learned in the companion theory course, Promoting Healthy Childbearing and Childrearing Families. Competencies needed by the nurse generalist in the care of childbearing and childrearing families are developed in increasingly complex learning experiences. Critical thinking, clinical decision-making, and leadership skills utilized by the nurse caregiver in primary and secondary healthcare settings are emphasized.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 509. Nursing in Communities. 2 Hours.

In this theory course, students will analyze theories, processes, issues, demographic data, and epidemiological trends that affect population aggregates within communities. Emphasis is on increasing knowledge of professional roles to promote nursing care focused on illness and injury prevention, health promotion, health maintenance, health education and coordination of care for aggregate groups in diverse community settings.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 510L. Clinical Practice in Communities. 2 Hours.

In this practicum course, students will apply community and public health concepts in the care of individuals, families, groups, and communities in diverse clinical settings. Emphasis is on increasing knowledge of professional roles to promote nursing care focused on illness and injury prevention, health promotion, health maintenance, health education and coordination of care for aggregation groups in diverse community settings.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 512. Pathophysiology for the Advanced Generalist. 3 Hours.

NUR 512 is designed to provide the student with an opportunity to build upon existing knowledge of basic physiology. Emphasis is placed on the use of critical thinking to apply physiologic principles in explaining adaptations to pathogenic changes in the systems discussed. Admission to the School of Nursing is required. Corequisite: NUR 501, NUR 502L, NUR 504L, NUR 513 and NUR 514L.

NUR 513. Pharmacology and Therapeutics for the Advanced Generalist. 3 Hours.

This course focuses on the analysis and utilization of principles of pharmacology, pharmacodynamics and pharmacokinetics for the purpose of planning, implementing and evaluating therapeutic pharmacological interventions. The unique characteristics of special populations related to therapeutic needs, as well as drug absorption, metabolism and excretion are defined. Corequisite: NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L.

NUR 514L. Health Assessment for the Advanced Generalist. 3 Hours.

This course is designed to provide the advanced generalist nursing student with the skills and knowledge to support critical thinking and diagnostic reasoning while conducting health assessments and planning nursing care for holistic, adaptive human beings across the lifespan. The following elements are integrated into the course: critical thinking, scientific integrity and ethics, human diversity, and social issues.

NUR 515. Psychiatric-Mental Health Nursing. 2 Hours.

Content in this course will emphasize communication and therapeutic nursing interventions for patients experiencing mental disorders. The course focuses on the use of critical thinking and clinical decision-making skills in the promotion, maintenance and restoration of optimum mental health of individuals and families. Emphasis is placed on the independent and collaborative roles of nursing in identifying risk factors for mental disorders, assessing mental health status, and designing and implementing psychological and psychosocial interventions associated with expected therapeutic outcomes.

Prerequisites: NUR 513 [Min Grade: C] and NUR 514L [Min Grade: C] and NUR 501 [Min Grade: C] and NUR 504L [Min Grade: C] and NUR 502L [Min Grade: P] and NUR 512 [Min Grade: C]

NUR 516L. Clinical Practice in Psychiatric-Mental Health Nursing. 2 Hours.

This clinical course focuses on promotion, maintenance, and restoration of mental health of individuals and families. Clinical experiences provide students with opportunities to utilize skills in the therapeutic use of self, critical thinking, and nursing process with patients in psychiatric mental health clinical settings.

Prerequisites: NUR 513 [Min Grade: C] and NUR 514L [Min Grade: C] and NUR 501 [Min Grade: C] and NUR 504L [Min Grade: C] and NUR 502L [Min Grade: P] and NUR 512 [Min Grade: C]

NUR 517. Leadership in Professional Nursing. 2-4 Hours.

This course focuses on leadership and management theories and models, resource allocation and management, delegation, conflict resolution, legal implications of practice, managed care, evaluation of practice, continuous quality improvement, healthcare systems, and contemporary issues in the workplace. Students assimilate the above information to use as a basis for practicing the leadership role in the companion residency course.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 518L. Synthesis Practicum in Nursing. 4-5 Hours.

This course focuses on direct and indirect clinical performance in the areas of nursing process and leadership, evidence-based practice, and the demonstration of professional nursing role behavior as the transition is made from student role to practicing nurse professional.

Prerequisites: NUR 505 [Min Grade: C] and NUR 506L [Min Grade: P] and NUR 515 [Min Grade: C] and NUR 516L [Min Grade: P]

NUR 533. Spirituality in Health Care. 3 Hours.

This course will focus on spirituality, including a greater understanding of different spiritual traditions, personal spiritual development, and the incorporation of spirituality into professional practice. The content will examine spirituality and health from the perspective of the major world religions and spiritual practices. The impact of spirituality on illness and healing will be examined. Spiritual care, including assessment and selected interventions, legal and ethical issues will be discussed with respect to individuals and families of varying developmental stages, socio-cultural backgrounds, and life situations. Students will be challenged to explore their own spirituality and its impact on their personal and professional lives. A foundation in computer utilization and accessing resources through use of the internet is strongly recommended.

NUR 534. Living With Loss. 3 Hours.

This course includes loss, grief, body-image changes, loss due to chronic conditions, and loss of life in childhood and adulthood explored from the viewpoint of a health-care professional.

NUR 557. Leadership and Management in Professional Nursing for RNs. 3 Hours.

This course focuses on leadership and management theories and models, resource allocation and management, delegation, conflict resolution, legal implications of practice, managed care, evaluation of practice, continuous quality improvement, healthcare systems, and contemporary issues in the workplace. Emphasis is placed on the integration of all professional role behaviors, application of research, and leadership/management skills. For students enrolled in 557, this course is a transition course into the RN-MSN option for baccalaureate degree RN Mobility students. Evaluation methods for the course will be different from those used for students enrolled in NUR 457.

Prerequisites: NUR 574 [Min Grade: C](Can be taken Concurrently) and NUR 597 [Min Grade: C](Can be taken Concurrently)

NUR 574. Transition to Professional Nursing Practice for RNs. 4 Hours.

Using an online format, this course is designed to enhance the registered nurse's knowledge of the role of the professional nurse in meeting the healthier needs of society. Historical, legal, political, and ethical issues affecting the profession will be examined. The relationship between selected issues, trends, and theories and professional nursing practice will be analyzed. Students will examine behaviors related to various roles of the professional nurse, including caregiver, teacher, advocate, research consumer, and counselor. Additionally, this course addresses communication skills necessary to a professional nurse including writing and computer literacy. For students enrolled in NUR 574, this course is a transition course into the RN-MSN option for post-baccalaureate degree RN Mobility students.

NUR 587. Supplemental Academic Course for Support (SACS). 1-3 Hour.

The purpose of this distance-accessible course is to introduce a structured format for students to review nursing concepts and processes related to a specific patient population. The course focuses on the role of the nurse as caregiver. Emphasis is on test-taking strategies and the review of didactic content to strengthen the student's knowledge base.

NUR 597. Community and Public Health Nursing for RNs. 4 Hours.

This course is designed for RN students to build on existing clinical expertise and knowledge, broaden exposure to different roles of the professional nurse in the areas of community and public health, and apply knowledge learned throughout the BSN curriculum to meet the needs of population aggregates. Emphasis is on professional nurse role development focused on illness and injury prevention, health promotion, health education, public health preparedness and advocacy for population aggregates across the life span. For students enrolled in NUR 597, this course is a transition course into the RN-MSN option for post-baccalaureate degree RN Mobility students.

Prerequisites: NUR 574 [Min Grade: C](Can be taken Concurrently)

NUR 600. Research and Statistics for Advanced Practice. 4 Hours.

This course is designed to prepare master's students with the research knowledge and skills to (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in nursing practice, and (3) participate in collaborative research. This course will include integration of the following elements: critical thinking, current technologies for data management and statistical analysis, scholarly writing, scientific integrity and ethics and human diversity. Statistical procedures examined will include univariate and bivariate statistics, parametric and nonparametric procedures and selected epidemiological measures. Prerequisite: Under-graduate statistics.

Prerequisites: NUST A or MA 180 [Min Grade: C] or PY 214 [Min Grade: C] or MA 480 [Min Grade: C] or QM 214 [Min Grade: C] or JS 120 [Min Grade: C] or (NUR 517 [Min Grade: C] and NUR 518L [Min Grade: P])

NUR 601. Role Development for Advanced Nursing Practice. 3 Hours.

This course is designed to prepare graduate nursing students to understand the concepts of advanced nursing practice and advanced practice nursing. Students will be expected to differentiate between advanced nursing practice and the practice of other nurses and health care providers. Concepts from a variety of models and theories from nursing and other disciplines will be discussed, and examples of how these concepts may be applied in advanced nursing practice will be offered. The concept of cultural competence will be explored as will its application when interacting with people from diverse ethnic and racial groups.

NUR 602. Issues Affecting Advanced Nursing Practice. 3 Hours.

This course prepares graduate nursing students to incorporate management and leadership skills in the practice arena. The health care environment and culture, selected organizational, economic, and financial theories, strategic planning, change theory, health care marketing and information and quality management will be explored in the context of contemporary issues such as bioterrorism and health care policy and regulation. This course will also include integration of the following elements: critical thinking, scholarly writing, research, theory evaluation and application, scientific integrity and ethics, human diversity and social issues.

NUR 603. Primary Health Care in Low Resource Countries. 3 Hours.

This course is designed for the Advanced Health Care Provider who plans to deliver primary health care in countries considered to be low resource areas as designated by the World Health Organization. These students will study the epidemiology, pathophysiology, diagnosis, and management of infectious and parasitic diseases throughout the global community. In addition, nutritional deficiencies and obstetric problems will be reviewed. Emphasis will be placed on those health problems which are not common in high resource countries. Implementation of the World Health Organization's Integrated Management standards will be included in the study of each disease as they apply to adults adolescents, and children. Potential personal safety issues for world travelers, and information designed to alleviate these issues will be studied. Each student will focus on a specific country or global area for a more in-depth learning experience.

NUR 604. Leadership in Advanced Nursing Practice Roles. 3 Hours.

The purpose of this course is to provide students with the foundation for an in-depth understanding of advanced nursing practice leadership. The focus of the course is on the principles and standards of advanced nursing practice. The emphasis of the course is on inter-professional collaboration in healthcare.

NUR 605. Research for Evidence-Based Practice. 3 Hours.

This core course is designed to prepare master's nursing students with the research knowledge and skills to (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in one's own nursing practice, (3) develop an evidence-based advanced nursing practice, and (4) contribute to expansion of nursing's knowledge base. This course will also include integration of the following elements and/or activities: critical thinking, informatics, current technologies for data management and statistical analysis, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, scientific integrity and ethics, human diversity, and social issues. The advanced-practice role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field. A graduate course in inferential statistics and a solid foundation in computer utilization and accessing scientific sources by internet is required.

NUR 606. Translating Evidence into Practice. 3 Hours.

The purpose of this course is to provide students with the knowledge and skills to evaluate and interpret evidence that supports application in practice. The focus of the course will be on the management and analysis of health care evidence and translation for practice. The emphasis of the course will be on evidence-based practice, safety and quality, informatics, emerging technologies, data management, applied statistics, evaluation and trend analysis.

Prerequisites: (NUR 604 [Min Grade: B] or NUR 604 [Min Grade: B]) and (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUST A or (NUR 517 [Min Grade: C] and NUR 518L [Min Grade: P]),)

NUR 607. Interprofessional Global Health Service Learning I. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. Students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the ecological framework developing a plan to address a specific global health problem with a community partner. The course focuses on planning a service learning project that will benefit a community partner. The project is planned and carried through by an interprofessional team. The course is primarily experiential, with students' time spent on planning the project and learning leadership and project planning skills.

NUR 608. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. Working in interdisciplinary teams, students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the socioecological framework to develop a plan to address a specific global health problem with a community partner.

NUR 609. Radiology for Advanced Practice. 3 Hours.

This course provides nurse practitioners and other mid-level providers with an introduction to radiography. The course provides the novice the opportunity to incorporate radiographic studies into working through a differential diagnosis. The course utilizes various common radiographic techniques including plain films, computed tomography and magnetic resonance imaging.

NUR 610. Health Care Systems for Advanced Nursing Practice. 3 Hours.

The purpose of this course is to provide students an opportunity to evaluate health care systems that influence advanced nursing practice. The focus of the course is on organizational theories of business practice and health care economics. The emphasis of the course is on the incorporation of business, legal, political, and organizational concepts in advanced nursing practice.

Prerequisites: NUR 606 [Min Grade: B] and NUR 613 [Min Grade: B] and NUR 614L [Min Grade: B](Can be taken Concurrently) and NUR 616L [Min Grade: B](Can be taken Concurrently)

NUR 611. Management of Diabetes Mellitus (Type 1 and 2). 3 Hours.

This course will provide a multi-disciplinary framework for the identification of those at risk or who already possess the metabolic syndrome, frank type 2 diabetes mellitus and its complications. A variety of management strategies will be presented from the perspectives of multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals are an important theme throughout this course as are the current controversies, issues and research findings underlying present approaches to treatment and patient/family education.

NUR 612. Advanced Pathophysiology. 3 Hours.

This course is designed to provide the student with an opportunity to build upon existing knowledge of basic physiology and pathophysiology. Emphasis is placed on the use of critical thinking to apply physiologic principles in explaining adaptations to pathogenic changes in the systems discussed.

NUR 613. Pharmacology and Therapeutics. 3 Hours.

This course focuses on analysis and utilization of principles of pharmacology and pharmacokinetics for the purpose of planning, implementing, and evaluating therapeutic pharmacological interventions. The unique characteristics of special populations related to therapeutic needs, as well as drug absorption, metabolism, and excretion, are defined.

NUR 614. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning for conducting health assessments and planning care for holistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity, and social issues.

Prerequisites: NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]

NUR 614L. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning for conducting health assessments and planning care for holistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity, and social issues. Pre or corequisite: NUR 612.

Prerequisites: NUR 612 [Min Grade: B](Can be taken Concurrently) or NUR 612 [Min Grade: B](Can be taken Concurrently)

NUR 615. Sexuality Issues in Health and Illness: A Lifespan Approach. 3 Hours.

This course includes the ethical, social, biological, and psychological concepts of human sexuality.

NUR 616L. Focus on Advanced Nursing Practice Specialization. 2 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NUR 618L. Clinical Diagnostic Reasoning. 4 Hours.

A modular organ system approach utilizing case studies will be used to pull together basic principles from pathophysiology, pharmacology and physical/health assessment to develop clinical diagnostic reasoning skills necessary for the nurse practitioner. This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning to apply in the subsequent clinical nursing courses. Students will utilize the knowledge and skills learned in NUR 618QL as they diagnose and manage the care of clients with acute, chronic, and episodic health problems throughout the life span.

NUR 619. Health Issues in Culturally Diverse Populations in the United States. 3 Hours.

This course provides students with an overview of health issues and health disparities confronting culturally diverse populations in the United States. The course also addresses genetic, cultural, historical and demographic factors that influence these health issues and disparities, implications for culturally effective health care, and for development of health policy.

NUR 620. Social Responsibility in Global Health. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham. Working in interdisciplinary teams, students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the socioecological framework to develop a plan to address a specific global health problem with a community partner.

NUR 630. Principles of Epidemiology. 3 Hours.

This course is intended to provide the advanced practice nurse with a working knowledge of epidemiology and biostatistics as they relate to nursing practice. Additionally, phenomena along the wellness continuum will be discussed. The Natural History of Disease Model will be applied to the study of health and illness in human populations.

Prerequisites: NUR 600 [Min Grade: C]

NUR 633. Growth and Development. 3 Hours.

The content of this course is centered on major theories of development including physiological, psychoanalytic, social, stimulus-response, cognitive and moral. Current areas and findings of research are investigated and research designs and methods are critiqued. Self-selected in depth studies are made and shared. Contributions of the study of development to the functional practice of nursing are demonstrated.

NUR 634. Perspectives in Global Health Leadership. 3 Hours.

This course is designed to provide students with an understanding of global aspects of health care leadership. The course will focus on identification of characteristics of global health care leaders, leadership theories, and strategies to develop one's own personal leadership abilities. The course will provide students with a unique opportunity to interact with health care leaders from countries around the world, and develop projects related to an aspect of global health care leadership of interest to each student.

NUR 637. Genetic Principles and Issues. 3 Hours.**NUR 639. Complementary Therapies and Integrative Hlth Care. 3 Hours.**

The focus of this elective course is on holistic nursing utilizing complementary and alternative therapies and integrative health care as an emerging paradigm in the health care arena. This course will examine both the concepts of integrative health care and major complementary therapies, including theoretical basis and research support, actions, uses, contraindications, and side effects. The socio-cultural, economic, legal and ethical issues associated with complementary therapies will be included as well as standards for practice and available resources. Students will be encouraged to explore ways in which they can counsel patients regarding complementary therapies as well as potential inclusion of the therapies in their own practice.

NUR 641. Herbals and Nutritional Supplements. 3 Hours.**NUR 642. Health Education and Social Welfare in a Global Community. 3 Hours.**

The purpose of this course is to provide students with a cross-cultural experience in which they will spend time in a selected global community while learning about health, educational and social welfare issues. Students will participate in pre-trip seminar in Birmingham or on-line prior to travel. The seminar(s) will focus on an overview of the course, a model of assessing culture and an overview of selected global community's culture. Students will also participate in seminars on a variety of health, education and social welfare topics provided by the course instructor and by resource persons from the selected global community.

NUR 643. Introduction to Nursing Informatics. 3 Hours.

The organizing framework for this course is based on the three concepts that form the theoretical basis of nursing informatics, data, information and knowledge. Students will explore how data can be organized into information for the generation of knowledge through the design, selection and implementation of clinical information systems. The course has two sections: theory and laboratory. The theoretical content will focus on the collection, organization, analysis and dissemination of information in nursing and healthcare. Laboratory work will familiarize the student with computer applications designed to manage nursing and healthcare information.

NUR 644. Principles of Developmental Care Newborn Infants. 3 Hours.

Provides students with an overview of principles of individualized developmental care for newborns and infants. The course also addresses principles of family-centered care as a key component of developmental care. Students review concepts and theories related to molecular biology, fetal, infant and family development, psychology and sociology in assessing and planning care to promote optimal development of high risk infants and families. Students explore roles of nurses and other interdisciplinary team members in developmental care are assessed, and develop plans to promote organizational change in order to incorporate developmental care principles in a clinical setting.

NUR 667. Psychosocial Aspects of Evidence-Based Practice in Chronic Illness. 3 Hours.

This course is organized around the concepts of evidence-based practice, psychosocial nursing and chronic illness. The chronic illness trajectory across the individual's and family's life span and the needs of vulnerable populations with attention to disparity of care and cultural competence of involved health care providers is included. This course is designed to provide the undergraduate student with the basic knowledge and skills needed to provide evidence-based interventions and the graduate student to analyze needs for development of interventions to address the psychosocial needs of those with chronic illness.

NUR 670. Occupational Health Management Principles. 1 Hour.

This course provides the student with a working knowledge of management topics specific to planning, directing, and evaluating occupational health services.

NUR 671. Principles and Practice of Occupational Toxicology and Disease. 3 Hours.

This course is designed to provide the student with an opportunity to build upon existing knowledge of physiology and pathophysiology. Emphasis is placed on the use of critical thinking to assess risk, determine effects, and plan strategies to minimize effects of toxicant exposure and occupational diseases in worker populations.

NUR 674L. Evaluation and Management of Occupational Health and Safety Programs. 1,2 Hour.

The aim of NUR 674QL is to provide the occupational health student with a working knowledge of program planning and managerial processes in occupational settings. This graduate course is designed to give the master's student an opportunity to actively explore factors which influence the delivery of occupational health and safety services and to critically evaluate the role functions of managers of those services. Decision-making processes related to financial management and resource allocation, along with management of health and safety programs, will be emphasized. Planning for and implementing a worksite occupational health and safety intervention in industry at the aggregate level will be a major part of the course.

NUR 686. Honors Seminar III: Project Implementation. 3 Hours.

This required course for Honors Program students provides opportunities for implementation of an innovative evidence-based practice strategy which integrates human responses to health and illness and professional practice roles. Course content includes clinical or research experiences in innovative practice approaches, discussions of implications for evidence-based practice and professional nursing roles, and guidelines for preparation of manuscript and presentations. Professional expectations include dissemination of findings through a public forum and collaboration with agencies for integration of findings into practice.

NUR 690. Independent Study in Nursing. 1-6 Hour.

Course allows concentration on a selected topic of interest relevant to the Program of Studies.

NUR 691. Independent Study in Clinical Nursing. 1-6 Hour.

Course provides for clinical learning activities which are in addition to the activities in the regular clinical sequence of a given option. Students apply or test out theories and knowledge obtained in established or independent study theory courses.

NUR 692. Clinical Practicum in Genetics. 1-2 Hour.

Course provides students with the opportunity to apply concepts related to Genetic Principles and Issues in a clinical practicum experience. Students will work with an approved preceptor in a clinical site that provides genetic services to prenatal clients and in a site that serves children with known or suspected genetic disorders. Students will conduct genetic assessments, apply the nursing process to develop culturally-appropriate and ethical plans of care, participate as a member of an interdisciplinary team and use genetic counseling principles in interactions with families and children who have known or suspected genetic problems. Students will also implement an educational program related to genetics for nurses in a clinical or community setting.

NUR 697. Department of Transportation Medical Examiner Certification Review Course. 1 Hour.

The purposes of this course are to: (1) introduce and assist the student to gain mastery of the regulations and guidelines set forth by the U.S. Department of Transportation related to medical fitness for duty determination of commercial motor vehicle drivers; and (2) provide the student with an opportunity to demonstrate competency in conducting a DOT medical examination in the laboratory setting.

NUR 698. Research Practicum. 1-2 Hour.

This graduate course is designed to give the master's nursing student an opportunity to actively participate in the research process. This practicum course allows students to assume limited responsibilities in the development, execution, and/or dissemination of a research study by performing selected roles within the research team. It is acknowledged that given the limited time allotted to the practicum, students may only have the opportunity to participate in one phase of a study due to the extended period usually required to initiate and conduct a study, or to compile the data to present results to target audiences. This course may include integration of the a wide range of experiences such as: using informatics, data management, using statistical analysis software programs, scholarly writing, and preparing or giving presentations to professional or lay audiences. The advanced practice role emphasis of this course is that of investigator and research collaborator.

NUR 699. Thesis Research. 1-4 Hour.

The thesis is the result of original research work undertaken by the student and the interpretation of those results. The document should also demonstrate the candidate's acquaintance with the literature of the field and with proper selection and execution of research methodology. The physical form of the thesis must comply with published departmental and university guidelines for theses and dissertations. The student works under the guidance of a major professor with a committee of faculty members. However, the obligations of research, accuracy, writing, and quality rest with the student. A public defense of this work is expected. A minimum of four hours of credit is required for completion of thesis hours, although a variable number of hours may be taken per term as necessary. The advanced practice role emphasis of this course is that of investigator, research collaborator, and author.

Prerequisites: GAC M

NUR 700. Clinical Data Management and Analysis. 3 Hours.

This required course provides students with the knowledge base to understand, collect, manage, and measure clinical data. Students will explore data collection and management processes, levels of measurement, basic statistics, and measurement for improvement in order to effectively use clinical data. Data entry exercises employed through analytical tools and statistical software packages will allow the students to practice and apply the basic data management and analysis skills needed for the evaluation of clinical data and evidence-based practice.

NUR 701. Writing for Publication. 3 Hours.

This course concerns the development of skills in writing, editing, and preparing manuscripts for publication from initial idea to submission of a publishable manuscript. The course emphasizes a writing process that encourages productivity and collegial peer review. Legal and ethical aspects of authorship prepare students for responsible practices expected of scholars. Students should have mastered basic writing skills, e.g., grammar, syntax, and computer skills, prior to enrolling in this course.

NUR 706. Theory Building in Nursing. 4 Hours.

This course focuses on the nature of knowledge in practice disciplines with an emphasis on philosophy of science as an underpinning for knowledge development and research; approaches to theory, statement, and conceptual development, and criteria for evaluation of theory. Students examine a variety of sources regarding the nature and modes of theory, model, and concept development in practice disciplines. They select research literature in their substantive area for isolation of concepts, theories, and research contexts to assess congruence between theoretical and operational systems, and suggest ways to remedy problems. They interpret research reports in their substantive area from a theory development and testing perspective, providing a visual schematic representation of their analysis. Through group interaction, they formulate conclusions about the state of the art and forecast directions for theory development as a basis for practice. Each student develops a personal philosophy of science. Admission to PhD program in nursing or permission of instructor.

NUR 729. Evidence-Based Practice Design and Translation. 3 Hours.

The purpose of this course is to provide students with models for evidence-based practice (EBP) design and improvement translation. Students learn to formulate clinical questions in answerable format, and search for and identify best research evidence. The focus of the course is to evaluate and critically appraise evidence for rigor and applicability to the clinical problem and is designed to improve clinical outcomes. Students will translate the evidence into practice environments for safe, high-quality care. Students will gain access to information that will support optimal clinical decision-making. Improvement translation sciences will also be introduced.

Prerequisites: NUR 700 [Min Grade: B] or NUR 700 [Min Grade: B]

NUR 730. Current Topics in Nursing. 1-3 Hour.

A special topic seminar with variable focus.

NUR 731. Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing. 3 Hours.

This required core course in the Doctorate of Nursing Practice program provides an understanding of the use of theory and conceptual foundation to guide the complexity of specialty nursing practice at the doctoral level. The content is derived from the philosophical and scientific underpinnings of nursing, natural, and psycho-social sciences.(on-line) (Essential I).

Prerequisites: NUR 701 [Min Grade: B] or NUR 701 [Min Grade: B]

NUR 732. Design and Statistical Methods for Advanced Practice Nursing. 3 Hours.

This required core course for the Doctorate of Nursing Practice program provides the student with the basis to search, retrieve, and manipulate statistical data. The focus of this course is on quantitative and qualitative methodologies, research design, and data analysis. The content provides essential knowledge for evaluation of research to guide evidence-based practice at the highest level. (Essential III).

NUR 733. Informatics for Advanced Practice Nursing. 3 Hours.

This course focuses on the collection, organization, analysis, and dissemination of information in nursing and health care. Students are introduced to the specialty of nursing informatics, the information system life-cycle, telemedicine, and the use of technology to enhance nursing care delivery and patient safety. Also, students learn how to design, use, and manipulate large and small patient databases for the analysis of patient outcomes. (Essential IV).

Prerequisites: NUR 729 [Min Grade: B] or NUR 729 [Min Grade: B]

NUR 734L. Advanced Experiential Clinical Course. 1-6 Hour.

This course provides the opportunity for DNP students to demonstrate excellence in providing complex care and leadership in healthcare settings.

NUR 735. Population Health in Advanced Practice Nursing. 3 Hours.

This course for the Doctor of Nursing Practice program prepares the student to implement specialty population-based disease prevention and health promotion activities to achieve national and international goals of improving worldwide health status. The course focuses on a spectrum of issues affecting health, which include emerging infectious diseases, emergency preparedness, disparities in health and healthcare services, and the impact of behavior and lifestyle choices on health. 3 credit hours (Essentials V and VII).

NUR 736. Application of Best Practices. 3-4 Hours.

This course prepares the student to evaluate interdisciplinary clinical and health systems for best practices and outcomes in a specialty area. Students acquire the knowledge, skills and tools to support, promote, and implement evidence-based specialty practice in nursing and health care delivery systems to improve health outcomes. Emphasis is on the synthesis, critique, and application of evidence to support quality clinical and organizational practices.

Prerequisites: NUR 731 [Min Grade: C] and NUR 732 [Min Grade: C]

NUR 737. Interdisciplinary Leadership and Role Development for Practice Excellence. 3 Hours.

This course is a required core DNP course that focuses on organizational and systems leadership and knowledge and skills critical to role development in independent and inter- and intra-disciplinary practice. Content includes communication, conflict resolution, collaboration and negotiation, leadership, and team functioning to maximize success in the establishment of safe, effective patient-centered care in complex environments.

NUR 738L. Scholarly Project Development. 2-3 Hours.

NUR 738L is a 3-hour seminar designed to assist the student in selecting an area of interest within a practice specialization, and in demonstrating professional competencies related to that area of interest. The student will document previously acquired abilities and competencies in a professional portfolio. Students will participate in the seminar to obtain guidance, be involved in discussion, and receive peer suggestions about the portfolio and project plans.

Prerequisites: NUR 736 [Min Grade: C]

NUR 739L. Scholarly Practice Project. 1-7 Hour.

This required course is the capstone clinical course in all advanced practice tracks. The student presents evidence of achievements and competencies in a professional portfolio. The practice residency is completed in a specialty area of the student's choice. One credit hour of each semester of the residency is devoted to classroom seminar. The seminar focuses on the aspects of the final practice project and interventions that promote health, prevent illness and disability, and alleviate health disparities. Small group sessions are formed for students who are at similar stages of completion of the course requirements. The final project is selected and planned by the student and the advisor and is implemented during this course. The student completes the project, evaluates the outcomes, disseminates the findings, and makes a formal, scholarly presentation to faculty and peers. (Essentials I, VIII).

NUR 740. Health Policy and Politics: Implications in Health Care. 3 Hours.

This required core course in the Doctor of Nursing Practice program focuses on the basic principles of health policy and the influence of the political process as a systematic approach to health care in the United States and internationally. The course prepares students to assume complex leadership roles in order to advance specialty practice and health. This course focuses on the unique challenges of engaging and influencing health care policy in the U.S. and internationally. It is designed to develop skills, techniques, and approaches to the critical analysis of health policy proposals, health policies, and related issues from the perspective of consumers, nursing, other health professions, and other stakeholders in policy and public forums. The health policy framework is analyzed from a governmental, institutional, and organizational perspective. (Essentials I, II, III and V).

NUR 741. Cancer Prevention and Control Training Program (CPCTP): Research Intensive. 2 Hours.

Grants process and proposal writing in healthcare research using NIH predoctoral and postdoctoral applications. Strategies for successful proposal preparation include the production of elements required in PHS-398 research grant proposal.

NUR 750. Quantitative Research Methods. 3 Hours.

This course is a survey of quantitative research methods and the first required, research core course in the doctoral nursing program. The course is designed to prepare doctoral nursing students with the research knowledge and skills to: (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in one's own nursing practice, and (3) contribute to expansion of nursing's knowledge base. This course will also include integration of the following elements and/or activities: critical thinking, synthesis of quantitative research literature, scholarly writing, scientific integrity and ethics, human diversity, and social issues. The advanced practice role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field. Students must have a solid foundation in computer utilization and accessing scientific sources by Internet.

NUR 751. Philosophical Foundations of Science. 3 Hours.

The purpose of this course is to introduce the student to the concept of truth, and scientific worldviews used to confirm or refute truth over the course of history and during specific periods of social and political contexts. The overall desired student outcome of students participating in the course is demonstrated skill in analysis and application of diverse approaches to knowledge development to research.

NUR 752. Responsible Conduct of Research: A Cross-Cultural Perspective. 2 Hours.

This course will examine a wide range of historical and modern treatises that have shaped ethical practice in the dominant western culture as well as medical ethical theories in other cultures. The course will emphasize comparing and contrasting various world views of ethical research practice from a cultural and global perspective. The content will focus on the pillars of liberal political theory which include respect for persons, autonomy, justice and rights-based codes. In addition, the expectations and regulations of Institutional Review Boards will be examined with an emphasis on developing effective strategies to anticipate procedural problems and expedite approval of student research applications. In addition, students will complete and provide proof of current completion of the UAB IRB training course (within 12 months) as an initial pass/fail learning activity. This course will also include integration of the following elements and/or activities: critical thinking, informatics, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, human diversity, cultural competence, global concerns and health disparity issues. The advanced role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field.

NUR 753. Nursing as a Scientific Discipline. 2 Hours.

The purpose of this course is to provide students with an overview of the processes of knowledge development and contributions of nursing to scientific knowledge. The course focuses on multiple ways of knowing and strategies for expanding knowledge to meet changing societal needs. Students will have an opportunity to appraise different modes of inquiry that contribute to knowledge development as well as integrate different scientific perspectives into a trajectory of research within nursing and multidisciplinary contexts.

NUR 754. Issues in Leadership and Health Policy. 3 Hours.

This graduate core course is designed to prepare doctoral nursing students with advanced theory in health care leadership and analysis of health policy: (1) examine theories of leadership behavior to improve the delivery and or provision of nursing care, (2) examine aspects of leadership in policy analysis and advocacy, (3) develop an evidence-based foundation for practice as a nursing leader and (4) contribute to the improvement of patient care across the health care continuum through leadership. This course will also include integration of the following elements and /or activities: critical thinking, informatics, current technologies for information retrieval and data management, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, scientific integrity and ethics, human diversity, cultural competence and health disparity issues. The advanced role emphasis of this course is that of research team leader, academic administrator, health policy advocate and content expert in a selected practice field. Admission to the Doctorate of Philosophy (PhD) Program of the School of Nursing.

NUR 756. Applied Statistical Analysis Techniques. 4 Hours.

This required core course in the Doctor of Philosophy program is intended to provide the student with the basis to search, retrieve, and manipulate statistical data. It provides an underpinning for the understanding of research methods and findings, and supports clinical scholarship practice.

NUR 790. Independent Study in Nursing. 1-9 Hour.

Independent Study in Nursing.

NUR 791. Independent Study in Clinical Nursing. 1-9 Hour.

Independent Study in Clinical Nursing.

NUR 798. Research Practicum. 1-9 Hour.

Research Practicum. The research practicum is a series of course credits taken throughout the student's doctoral coursework to provide continuous experience under the supervision of the mentor.

NUR 799. Dissertation Research. 1-9 Hour.

Dissertation Research - Prerequisites: Comprehensive Examination and admission to candidacy.

Prerequisites: GAC D

NWH-Nursing - Womens Health Courses**NWH 631. Women's Health for Advanced Nursing Practice I. 3-5 Hours.**

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to women.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and (NUR 616L [Min Grade: B] or NUR 616L [Min Grade: B])

NWH 632. Women's Health for Advanced Nursing Practice II. 3-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of women. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to women.

Prerequisites: NWH 631 [Min Grade: B] or NWH 631 [Min Grade: B]

NWH 685L. Practicum I: Women's Health Care Nurse Practitioner. 1-3 Hour.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to women. The focus of this course is on the delivery of health care services to women. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NAH 621 [Min Grade: B] or NAH 621 [Min Grade: B]) and (NAH 685L [Min Grade: P] or NAH 685L [Min Grade: P]) and (NWH 631 [Min Grade: B] or NWH 631 [Min Grade: B])

NWH 686L. Practicum II: Women's Health Care Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to women. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for women. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NWH 632 [Min Grade: B] or NWH 632 [Min Grade: B]) and (NWH 685L [Min Grade: P] or NWH 685L [Min Grade: P])

NWH 692L. Residency: Women's Health Care Nurse Practitioner. 1-6 Hour.

The purpose of this course is to refine management strategies and best practice models in the delivery of high quality care to women. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of women.

Prerequisites: NWH 686L [Min Grade: P] or NWH 686L [Min Grade: P]

National Student Exchange A Courses**NSEA 500. NSE Level V Special Topics. 15 Hours.**

This course takes place via reciprocal exchange and has been evaluated by the appropriate UAB Academic Department as satisfying degree requirements at the graduate level.

NSEA 600. NSE Level VI Special Topics. 15 Hours.

This course takes place via reciprocal exchange and has been evaluated by the appropriate UAB Academic Department as satisfying degree requirements at the graduate level.

National Student Exchange B Courses**NSEB 4930. Special Topics in Spanish Literature. 3 Hours.**

This course takes place through the National Student Exchange Program. All credits have been reviewed and approved by UAB Academic Departments for equivalency. Topics This course takes place through the National Student Exchange Program. All credits have been reviewed and approved by UAB Academic Departments for equivalency. Independent readings, research, or project. (Course focus for this semester: detective fiction.).

NSEB 500. NSE Level V Special Topics. 15 Hours.

This course takes place via reciprocal exchange and has been evaluated by the appropriate UAB Academic Department as satisfying degree requirements at the graduate level.

NSEB 600. NSE Level VI Special Topics. 15 Hours.

This course takes place via reciprocal exchange and has been evaluated by the appropriate UAB Academic Department as satisfying degree requirements at the graduate level.

OB-Oral Biology Courses**OB 500. Graduate Cariology. 3 Hours.****OB 522. Biochemistry of Connective Tissue and Bone. 3 Hours.****OB 525. Current Issues in Nutrition and Oral Health. 3 Hours.****OB 563. Saliva as a Diagnostic Fluid. 3 Hours.****OB 590. Oral Biology Seminar. 1-2 Hour.****OB 598. MR Lev Non-Thesis Res. 3-6 Hours.****OB 599. Thesis Research. 3-6 Hours.****OB 600. Graduate Cariology. 3 Hours.****OB 601. Caries Journal Club. 1 Hour.**

Introduce students communication skills in areas of scientific reading, presentation and use of scientific material.

OB 602. Pharmacology and Therapeutics for Dentistry. 3 Hours.**OB 603. Oral Inflammation and Periodontal Disease. 3 Hours.**

Provides a fundamental knowledge base for understanding the initiation and progression of oral inflammation and how these processes mediate tissue destruction and bone loss.

OB 604. Clinical Applied Dent Material. 3 Hours.

OB 607. Prenatal Craniofacial Growth and Development. 3 Hours.
PRENATAL CRANIOFACIAL GROWTH and DEVELOPMENT.

OB 608. Special Topics in Oral Biology. 1 Hour.

OB 611. Saliva:Composition and Function. 3 Hours.

OB 616. Postgraduate Oral Histology. 3 Hours.

OB 620. Oral Microbiology and Immunology. 3 Hours.

OB 622. Biochemistry of Connective Tissue and Bone. 3 Hours.
Biochemistry of Connective Tissue and Bone.

OB 625. Current Issues in Nutrition and Oral Health. 3 Hours.
Current Issues in Nutrition and Oral Health.

OB 627. Surgical Implants in Dentistry. 3 Hours.

OB 630. Introduction to Clinical Trials/Epidemiology. 3 Hours.

OB 631. Ethics in Biomedical Research. 1 Hour.

OB 632. Special Topics on Mucosal Immunology. 3 Hours.

OB 633. Research Design and Methodology. 3 Hours.

OB 634. Oral Biology Journal Club. 1 Hour.

OB 657. Prenatal Craniofacial Growth and Development. 3 Hours.
PRENATAL CRANIOFACIAL GROWTH and DEVELOPMENT.

OB 663. Saliva as A Diagnostic Fluid. 3 Hours.

OB 690. Oral Biology Seminar. 1 Hour.

OB 697. Journal Club - Frontiers in Biomedical Research. 1 Hour.

OB 698. MR Lev Non-Thesis Res. 1-6 Hour.

OB 699. Thesis Research. 1-6 Hour.

Prerequisites: GAC M

ONC-Oncology Courses

ONC 621. Advanced Practice Nursing for Oncology Care. 3 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced oncology practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse in the oncology setting. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to adult oncology patients.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

ONC 622. Cancer Assess, Diag, Managemnt. 2 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of oncological problems in adult oncology patients. The focus of this course is on assessment, diagnosis and management strategies for common oncology illnesses from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to adult oncology patients.

Prerequisites: ONC 621 [Min Grade: B] or ONC 621 [Min Grade: B]

ONC 623. Effects Cancer & Cancer Therap. 3 Hours.

The purpose of this course is to synthesize how in-depth knowledge and theoretical concepts are related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to adult oncology patients. The emphasis of this course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (ONC 621 [Min Grade: B] or ONC 621 [Min Grade: B]) and (ONC 622 [Min Grade: B] or ONC 622 [Min Grade: B]) and (ONC 685L [Min Grade: B] or ONC 685L [Min Grade: B])

ONC 685L. Practicum I - Oncology Nurse Practitioner. 2 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to adult oncology patients. The focus of this course is on the delivery of health care services to adult oncology patients. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: NUR 621 [Min Grade: B] or NUR 621 [Min Grade: B]

ONC 686L. Practicum II - Oncology Nurse Practitioner. 2 Hours.

The purposes of this course is to prioritize management strategies and apply selected practice models for delivery of care to adult oncology patients. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic and management skills to provide care for adult oncology patients. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (ONC 621 [Min Grade: B] or ONC 621 [Min Grade: B]) and (ONC 622 [Min Grade: B] or ONC 622 [Min Grade: B]) and (ONC 685L [Min Grade: P] or ONC 685L [Min Grade: P])

ONC 692L. Residency - Oncology Nurse Practitioner. 3 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to adult oncology patients. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of adult oncology patients.

Prerequisites: (ONC 621 [Min Grade: B] or ONC 621 [Min Grade: B]) and (ONC 622 [Min Grade: B] or ONC 622 [Min Grade: B]) and (ONC 623 [Min Grade: B] or ONC 623 [Min Grade: B]) and (ONC 685L [Min Grade: P] or ONC 685L [Min Grade: P]) and (ONC 686L [Min Grade: P] or ONC 686L [Min Grade: P])

OPT-Optometry Courses

OPT 500. Spanish for Eye Care. 1 Hour.

OPT 501. Global Visual Health. 1 Hour.

OPT 502. Adv Develop Vision& Learning. 1 Hour.

OPT 503. Advanced Contact Lenses. 2 Hours.

OPT 507. Advanced Diabetes Care. 1 Hour.

OPT 511. Spanish for Eye Care. 1 Hour.

OPT 512. Advanced Contact Lenses. 1 Hour.

OPT 513. Interprof Collab Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham. Working in interdisciplinary teams, students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the socioecological framework to develop a plan to address a specific global health problem with a community partner.

OPT 523. Advanced Contact Lenses. 2 Hours.**OPT 524. Advanced Contact Lenses. 2 Hours.****OPT 527. Advanced Vision and Learning. 1 Hour.****OT-Occupational Therapy Courses****OT 605. Therapeutic Skills. 3 Hours.**

Group theory and group dynamics are presented. Basic group and individual client-therapist interaction skills are introduced, including: selecting a theory base, designing groups, writing group protocols, analyzing group activities, implementing specific group techniques, and evaluating progress of group members. Methods of establishing rapport, giving feedback, and employing therapeutic use of self are emphasized.

OT 606. Frameworks for Occupational Therapy Practice. 3 Hours.

Introduction to fundamental concepts of Occupational Therapy frameworks, theory, philosophy, conceptual models and models of practice.

OT 607. Analysis of Occupational Performance. 3 Hours.

Introduction to intervention techniques commonly used in occupational therapy practice; activity analysis and synthesis; application of typical growth and development in relationship to different age groups and populations.

OT 609. Barriers to Occupational Performance. 3 Hours.

Exposure to content specific to human disease processes, injuries, and developmental or inherited abnormalities within body systems that affect individual's occupational performance.

OT 610. Mental Health Diagnosis Across Life Span. 3 Hours.

Examines developmental and psychiatric conditions that result from disease, congenital, traumatic, environmental or social processes. Relationships among disease or disorder, impairments, activity limitations and participation restrictions are emphasized in terms of the impact upon occupational performance.

OT 620. Found of Occupation: A&P. 4 Hours.

Designed to provide Occupational Therapy students a fundamental knowledge of human anatomy. An emphasis will be placed on the musculo-skeletal and peripheral nervous systems to enhance the understanding of conditions that will likely be encountered in the practice of Occupational Therapy.

OT 623. Found of Occup: Neuroscience. 3 Hours.

Advanced study of structure and function of central nervous system augmented with client examples.

OT 624. Occupations of Infants, Children and Adolescents. 4 Hours.

This course addresses aspects of evaluation, intervention planning, implementation, and specific intervention strategies across diagnostic categories for children, birth through adolescents. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on components of occupational performance, and occupational performance issues related to adaptation and life satisfaction.

OT 625. Occupations of Adults and Older Adults I. 4 Hours.

This course addresses aspects of evaluation, intervention planning, implementation, and specific intervention strategies across diagnostic categories in adult and elder rehabilitation. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on occupational areas of work, play, and leisure addressing components of occupational performance and contexts and how these areas affect occupational performance.

OT 631. Found of Occup: Biomechanics. 4 Hours.

Basic kinesiological principles and functional movement patterns of the human body during occupational performance. Study of principles and techniques for obtaining data about the status of the client's joint range of motion and muscle strength.

OT 632. Fieldwork Seminar I. 1 Hour.

Forum for exchange of ideas and experiences; detailed case study/inservice on modality and interventions chosen from client census during previous term's Level I Fieldwork experience.

OT 633. Fieldwork Seminar II. 1 Hour.

Forum for exchange of ideas and experiences; detailed case study/inservice on modality and interventions chosen from client census during previous term's Level I Fieldwork experience.

OT 634. Seminar in Professional Readiness. 2 Hours.

Forum for exchange of ideas and experiences; student, faculty, and alumni presentations on variety of topics.

OT 642. Research Design in Occupational Therapy. 1-3 Hour.

Review of research methodologies appropriate for use in clinical practice; topics include sampling, data management, and IRB training and approval. Students will design, implement, and document final projects.

OT 643. Data Analysis in Occupational Therapy Research. 1-3 Hour.

Review of data management and data analysis using SPSS Student Version to design, implement, analyze and document student final projects.

OT 644. Project Dissemination - Professional Writing and Presentation. 1-3 Hour.

Review documentation of project outcomes, writing for publication, and professional presentations to design, implement, analyze and, document student final projects.

OT 647. Leadership in Occupational Therapy. 3 Hours.

To develop leadership competencies for the occupational therapist to enable understanding of personal development and organizational change dynamics.

OT 653. Using the Literature for Evidence Based Practice. 3 Hours.

History of and rationale for evidence-based practice, introduction to typologies of evidence, search of data bases, developing questions for occupational therapy practice, critiquing evidence, analyzing bodies of evidence developed in response to research questions, and integrating evidence into practice.

OT 655. Qualitative Research Methods for Health Profession. 2 Hours.

Explores the paradigm of qualitative research including the role it has in the development of a deeper understanding of client populations and the development of theory in occupational therapy. Research design, data collection strategies, and methods of analysis will be discussed.

OT 658. Foundations of Professional Education. 4 Hours.

Introduction to occupational therapy post-professional education. Concepts introduced include the World Health Organization International Classification of Function, OT Practice Framework, aspects of continuing competency, American Psychological Association writing framework, and the American Occupational Therapy Association Professional Development Tool.

OT 660. Seminar: Interdisciplinary Svcs/Devel Disabilities. 1-2 Hour.

Synthesis of team-based approaches to intervention for infants, children, and youth with known or suspected disabilities.

OT 661. Well-being and Health Through Occupation. 3 Hours.

Critical analysis of the patterns of participation of occupation and its influence on the health and well-being in the lives of individuals, groups and populations across the lifespan, identifying contextual factors which facilitate and or inhibit this participation. Evaluate and critique the evidence which supports the relationship between occupation, health promotion, lifestyle choices, and prevention of injury and disease, utilizing occupational therapy models and approaches to practice while considering contexts.

OT 662. Upper Extremity Function in Occupation. 4 Hours.

This course will provide the opportunity to consider the occupational therapy process related to the design, fabrication, application, fitting, and training in the use of orthotics, prosthetics, and other modalities. Students will consider and apply the foundational knowledge, underlying principles, indications, contraindications, and precautions necessary for evidence-based practice.

OT 663. Occupations of Communities, Organizations, & Systems of Practice. 2 Hours.

This course will introduce students to the relationship between occupation, health promotion, lifestyle and health within communities, using occupational therapy models of practice to frame this critique. The course provides opportunities to evaluate and critique the evidence base for current and emerging areas of occupational therapy practice within communities. Students will critically evaluate current occupational therapy practice and identify potential service gaps. Students will critically discuss strategies for the development of occupational therapy services, emphasizing the business-related aspects of working with communities. Funding will be a significant obstacle for occupational therapists working with communities. For this reason, the course will provide information on business plans, grant and foundation monies and opportunities for students to plan monetarily for a project.

OT 665. Occupations of Adults and Older Adults II. 4-5 Hours.

This course addresses aspects of evaluation, intervention planning, implementation and specific intervention strategies across diagnostic categories in adult and elder rehabilitation. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on occupational areas of work, play, and leisure addressing components of occupational performance and contexts and how these areas affect occupational performance.

OT 667. Research Methods. 3-4 Hours.

Research ethics, descriptive, exploratory and experimental design, basic statistical concepts, and discussion of various types of research to enable students to critically analyze and use scientific literature to improve practice. Emphasis on understanding components of the research report and concepts associated with judging of internal and external validity.

OT 668. Mental Health Practice in Adulthood. 4 Hours.

Examines psychiatric conditions that result from disease, congenital, traumatic, environmental or social processes. Relationships among impairments, activity limitations, and participation restrictions are emphasized in terms of the impact upon occupational performance. Evaluation, intervention planning, and intervention are studied.

OT 673. Engagement in Occupation Thru Technology I. 3 Hours.

Introduction to the relationship between occupation, health promotion, lifestyle, and health within communities, using occupational therapy models of practice to frame this critique. Evaluation and critique of the evidence base for current and emerging areas of occupational therapy practice and identification of potential service gaps.

OT 674. Engagement in Occupation thru Technology II. 3 Hours.

Designed to acquaint the student with assessments used in evaluation of clients for assistive technology, specific intervention strategies, elements of safety related to assistive technology, the education of clients and families and other key people in the context of the user.

OT 675. History and Theory of Occupation. 3 Hours.

Historical survey of occupation, occupational meaning, and purposeful activity as used by occupational therapists in study of occupational nature of human beings across life span.

OT 677. Foundations in Low Vision Rehabilitation I. 3 Hours.

Introduces the student to the field of low vision rehabilitation and addresses core knowledge needed for subsequent courses. Topics include settings and reimbursement for occupational therapy services, anatomy and physiology of the eye and visual system, medical conditions causing low vision, administration and interpretation of low vision exams, principles of optics, design and application of prescribed optical devices.

OT 679. Foundations in Low Vision Rehabilitation II. 3 Hours.

Techniques for selecting, developing, and applying interventions to enhance occupational performance. Topics covered include assistive technology and computer modifications, reading, writing, and environmental assessment/modification.

Prerequisites: OT 677 [Min Grade: C]

OT 685. Advanced Fieldwork Experience I. 10 Hours.

Full time supervised practice experience designed to develop entry level professional skills consisting of a 3-month experience.

OT 686. Advanced Fieldwork Experience II. 10 Hours.

Full time supervised practice experience designed to develop entry level professional skills consisting of a 3-month experience.

OT 688. Occupation & Health: Groups and Community. 1-2 Hour.

This course will provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings and to consider the domains and contexts of both occupation and its influence on health, well-being, and lifestyle.

OT 689. Foundations in Treatment of Visual Impairment from Brain Injury. 3 Hours.

Evaluation and intervention for adults experiencing occupational limitations due to visual processing impairment from acquired brain injury. Topics include neuroanatomy of the visual processing system, evaluation and intervention for deficits in visual acuity, visual field oculomotor function, and visual attention and cognitive processing.

Prerequisites: OT 679 [Min Grade: C]

OT 690. Foundations in Low Vision Rehabilitation III. 3 Hours.

Techniques for selecting, developing, and applying interventions to enhance occupational performance. Topics covered include activities of daily living with and without vision, functional mobility, diabetes, self-management, and driving and transportation.

Prerequisites: OT 679 [Min Grade: C]

OT 691. Foundations in Low Vision Rehabilitation IV. 3 Hours.

Students demonstrate ability to apply knowledge gained in the previous foundation courses to select and interpret evaluations and design interventions for adults with vision impairment. Format includes: a three-day on-campus intensive to provide review and synthesis of key evaluation and intervention principles for working with persons with age-related vision impairment and brain injury; practicum in diabetes self-management, prescribed optical devices and assistive technology; influence of policy and regulation on practice; ethical reasoning and advocacy; professional development and continuing professional competence.

Prerequisites: OT 677 [Min Grade: C] and OT 679 [Min Grade: C] and OT 689 [Min Grade: C] and OT 690 [Min Grade: C]

OT 692. Special Topics in OT. 1-3 Hour.

Readings for in depth study of specialized topics.

OT 693. Design and Implementation of Low Vision Rehabilitation Programs in the Healthcare System. 2 Hours.

In this course, students complete steps to implement a viable low vision rehabilitation program using the medical rehabilitation model. Topics covered: procedures and issues unique to low vision programs; identifying the target population and services; establishing a program structure; developing the rehab team, evaluation tools and treatment materials.

OT 695. Foundations in Treatment of Visual Impairment from Brain Injury II. 2 Hours.

Application of selecting appropriate evaluations and interventions for clients with visual processing impairment from brain injury. Includes creation of decision trees and completion of a series of case analyses.

OT 698. Master's Level Non-Thesis Research. 1-6 Hour.

This lab-based course introduces students to the skills and requirements necessary for participation in the portfolio process. Specifically, the course aims to orient the student to the steps toward portfolio completion, introduce critical thinking and reflective learning methods, and provide students with foundational experiences for self-directed learning.

Prerequisite: permission of instructor.

OT 699. Master's Level Thesis Research. 1-6 Hour.

Elements of proposal and development of thesis/project; thesis and institutional review board procedures; student presentation, group discussion, recommendations, and critique. Admission to candidacy required.

Prerequisites: GAC M

Optometry Basic Hlth Science Courses**Optometry/Vision Science Courses****PA-Surgeon's Assistant Courses****PA 601. Human Gross Anatomy. 4 Hours.**

Course provides a comprehensive survey of the gross anatomy of the human along with functional and applied anatomy as it relates to common clinical findings. It utilizes a lecture format and cadaver dissection laboratory sessions.

PA 601L. Human Gross Anatomy Lab. 0 Hours.

Human cadaver dissection laboratory for PA 601.

PA 602. Medical Physiology. 4 Hours.

Course emphasizes the normal function and control of various systems within the human body. The principles taught will serve as a foundation for understanding the etiology, management and prevention of disease processes.

PA 603. Pharmacology I. 3 Hours.

Course provides students with the pharmacologic knowledge needed to begin practice as primary care physician assistants. Delivery is via classroom lecture and supplemented with intermittent case studies requiring students to critically evaluate medical conditions and choose safe and effective medications in treating those conditions.

PA 604. Pharmacology II. 3 Hours.

Second and final course in a series that provides students with the pharmacologic knowledge needed to begin practice as primary care physician assistants. Delivered via classroom lecture and supplemented with intermittent case studies requiring students to critically evaluate medical conditions and choose safe and effective medications in treating those conditions.

Prerequisites: PA 603 [Min Grade: C]

PA 605. Pathology. 3 Hours.

Course is designed to describe the pathologic processes involved in common disorders and diseases; introduce students to the principals of clinical medicine and clinical problem solving; and provide students with the background needed for the clinical courses taught later in the curriculum.

PA 606. Clinical Medicine I. 4 Hours.

Introductory course in human disease and is designed to describe the pathologic processes involved in common disorders and diseases. It introduces students to the principles of clinical medicine and clinical problem solving as well as providing them with the background needed for the medical courses taught later in the curriculum.

Prerequisites: PA 601 [Min Grade: C] and PA 602 [Min Grade: C] and PA 605 [Min Grade: C] and PA 610 [Min Grade: C]

PA 607. Clinical Medicine II. 6 Hours.

Course presents the diagnosis and management of the most common clinical problems seen by primary care practitioners. This last course employs an organ systems approach incorporating relevant anatomy, physiology, pharmacology, pathology, radiology and nutrition into each section.

Prerequisites: PA 606 [Min Grade: C]

PA 608. Surgical Disease I. 3 Hours.

Course introduces students to common surgical disorders with early emphasis on physiologic changes, medical requirements and evaluation of patients before, during, and after surgery. It also provides basic instruction in the diagnosis, management, and complications associated with common surgical gastrointestinal and urogenital disorders.

Prerequisites: PA 601 [Min Grade: C]

PA 609. Surgical Disease II. 3 Hours.

Course delivered via didactic instruction and focuses on the pre-operative evaluation and diagnosis, and post-operative management and treatment of common disorders of the heart, lungs, and vascular systems.

Prerequisites: PA 608 [Min Grade: C]

PA 610. Clinical Lab Medicine. 3 Hours.

An introduction to laboratory diagnostics with an emphasis on pathology, microbiology, hematology, and clinical chemistry. Course utilizes lecture format, specimen handling in a clinical laboratory as well as cost effective diagnostic algorithms in problem-based case scenarios.

PA 610L. Clinical Laboratory Medicine Lab. 0 Hours.

Lab for PA 610 Clinical Laboratory Medicine.

PA 611. History and Physical Examination I. 2-3 Hours.

First course in a series of two that provides students with the skills necessary to elicit a comprehensive medical history, perform a complete physical examination and systematically report their findings. A variety of teaching formats are utilized including: lectures, small group activities, video productions, and simulated patients.

PA 611L. History and Physical Examination I Lab. 0 Hours.

Laboratory required for PA 611 History and Physical Examination I.

PA 612. History and Physical Examination II. 3 Hours.

Final course in a two-part series that will provide students with the skill necessary to elicit a comprehensive medical history, perform a complete physical examination and systematically report their findings.

Prerequisites: PA 611 [Min Grade: C]

PA 612L. History and Physical Examination II Lab. 0 Hours.

Laboratory component for PA 612.

PA 613. Surgical Techniques. 3 Hours.

Provides didactic instruction and applied technical skills in surgical techniques and various invasive medical procedures. An animal surgery laboratory, using live pigs is an essential component.

Prerequisites: PA 601 [Min Grade: C]

PA 614. Operating Room Techniques. 2 Hours.

Final course in a series providing didactic instruction and applied technical skills in surgical techniques and various invasive medical procedures. PA 614 places students in operating rooms in Birmingham area hospitals where they are taught the basics in surgical first assisting.

Prerequisites: PA 613 [Min Grade: C]

PA 615. Intro to the Profession. 1 Hour.

Course is designed to introduce students to the Physician Assistant profession and to prepare them to practice as professionals in a physician/PA/patient team. It will cover roles and responsibilities of the PA including their expected legal and moral behavior, their understanding of laws governing their practice and their ethical responsibilities in being health care professionals. The course will also teach students to respect the health, safety, welfare, and dignity of all human beings and to assess their own personal capabilities and limitations, striving always to improve their medical practice.

PA 616. Electrocardiography. 1 Hour.

Course presents the basic concepts needed to interpret the electrocardiogram and will provide opportunities to develop interpretive skills through analysis of rhythm strips and 12-lead electrocardiograms. Upon completion of the course, students will be able to systematically interpret basic rhythm strips and 12-lead electrocardiograms.

PA 617. Applied Behavioral Medicine. 2 Hours.

Course introduces students to human behavior, strategies and issues surrounding health education and theoretical models of how to change human behavior. This knowledge will enable students to incorporate health promotion and disease prevention strategies in their daily clinical practice to the benefit of their patients.

PA 618. Risk Management. 1 Hour.

Course provides an introduction to the legal, political and professional issues affecting physician assistant practice.

PA 619. Fundamentals of Clinical Research. 3 Hours.

Course provides students with the foundation of epidemiologic measures the reason for patterns of disease occurrence, the principles of medical surveillance, the methods for investigating disease outbreaks and the principles of diagnostic tests. Students will review study designs, the roles of variability and bias in the interpretation of scientific literature and the principles of clinical decision-making based on the medical literature.

PA 620. Analysis of Professional Literature. 2 Hours.

This course is designed to prepare students to critically evaluate medical literature and use as basis for making medical decisions.

PA 621. Clinical Services I. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 622. Clinical Services II. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 623. Clinical Service III. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 624. Clinical Services IV. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 625. Clinical Services V. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 626. Clinical Service VI. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 627. Clinical Service VII. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 628. Clinical Service VIII. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 629. Clinical Service IX. 4-5 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 633. Special topics in Physician Assistant Studies. 2-4 Hours.

Selected advanced topics of current scientific, clinical, and professional importance; specific topics designed to meet student need and interest.

PA 634. Simulated Clinical Concepts. 1 Hour.

Laboratory simulated clinical experience to provide supervised practice in clinical skills, practical procedures, teamwork, patient management, and decision making in preparation for the student's clinical year.

PA 637. Special Topics in Physician Assistant Studies. 2-4 Hours.

Selected advanced topics of current scientific, clinical and professional importance; specific topics designed to meet student need and interest.

PA 638. Senior Seminar I. 3 Hours.

This course is the first in a three course series designed to provide didactic instruction to prepare students for Physician Assistant Program.

PA 639. Senior Seminar Series II. 3 Hours.

This course is the second in a three course series designed to provide didactic instruction to prepare students for the Physician Assistant National Certification Exam (PANCE). The content areas for this course include common problems in the musculoskeletal, HEENT, reproductive, endocrine, and neurologic systems. Course instruction will consist primarily of student PowerPoint presentations. Each student will be expected to give two 25 - 30 minute lectures on pre-assigned topics and prepare an accompanying one page outline summarizing important points. Student lectures may be supplemented by case-based presentations and professional development lectures.

PA 640. Senior Seminar III. 2 Hours.

This course is the third in a three course series designed to provide didactic instruction to prepare students for the Physician Assistant National Certification Exam (PANCE). The content areas for this course include common problems in the psychiatric, substance abuse, genitourinary, anemia, leukemia and skin disorders.

PA 698. Presentation of Res Project. 1 Hour.

Oral and visual presentations and structured discussion of research papers developed in PA 620.

Prerequisites: PA 619 [Min Grade: C] and PA 620 [Min Grade: C]

PAT-Pathology Courses**PAT 700. Biology of Disease. 3 Hours.**

MOLECULAR AND CELLULAR GENERAL PATHOLOGY.

PAT 701. Molecular and Cellular Mechanisms of Disease. 3 Hours.**PAT 704. Pathology Research: Data Analysis and Presentation. 1 Hour.****PAT 726. Intro to Scientific Computing. 1 Hour.**

The purpose of this course is to provide an introduction to main computational skills required for scientific computing. Specifically, the participants are exposed to practical use of standard web available resources and computational tools for managing molecular biology data. Successful participation includes the development of scripts and programs for analyzing largescale data. Rationale and history: Nowadays we are in the Big Data era. This is characterized by the collection a huge amount of data so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. In the near future, the main challenges will include: curation, storage, search, sharing, analysis, and visualization of these data. This exponential trend to larger set of data is evident in biomedical sciences where cheaper high-throughput sequencing techniques are providing a huge amount of biomolecular data and connection between worldwide health institutions can provide access to large set of medical data through the EMRs. According to this scenario, future researchers in biomedical science will need to deal with large amounts of data to deliver high quality research. To bridge the gap between experimental and in silico investigators in biomedical sciences, we introduce this course particularly designed for people with low level of expertise in informatics that would like to learn basic scientific computing skills to improve their research. Organization: This course is organized as a hands-on training for graduate students, faculty and computational staff. A limited number of slots are made available for Pathology residents, fellows, and graduate students with interests in learning basic computing skills for research purpose. The first part of the course will be dedicated to the installation/configuration of Linux operating system. The attendees will become familiar with the most important command lines in UNIX shell.

PAT 727. Structural Bioinformatics. 3 Hours.

Purpose: The purpose of this course is to provide an introduction to main topics in computational structural biology/structural bioinformatics. Specifically, the participants are exposed to practical use of standard web available resources and tools for the analysis and comparison of macromolecular three-dimensional structures. Successful participation includes the development and implementation of computational tools and/or pipelines for large-scale studies in structural bioinformatics.

PAT 728. Computational Genomics. 2 Hours.

Purpose: The purpose of this course is to provide an introduction to main problems in Computational Genomics. Specifically, the participants are exposed to practical use of standard web available resources and tools for the analysis and comparison of genome sequences. Successful participation includes the development of a project that will result in the implementation of computational tools and/or pipelines for large-scale studies in Computational Genomics.

PAT 730. Lab Rotation. 1-13 Hour.**PAT 752. Lab Rotation Pathology. 1-3 Hour.**

Lab rotation.

PAT 777. Autopsy Experience. 1 Hour.

The purpose of offering an optional autopsy experience for PhD graduate students in MCP is to provide education of the thought processes and investigation involved in determining the pathological basis and causes of disease. It is anticipated that this experience will broaden the appreciation of the application of pathology as study of the science of disease.

Prerequisites: PAT 700 [Min Grade: C]

PAT 790. Special Topics (Doctoral Level). 1-6 Hour.**PAT 791. Advances in Molecular and Cellular Pathology. 1 Hour.**

PAT 795. CmBD Jrnl Clb: Bone and Cartilage: Bio and Disease. 1 Hour.

CME approved Journal Club occurs once a month and is sometimes replaced by outside speakers. Topics are coordinated with the Visiting Expert/Speaker program. It is co-directed by Kenneth G. Saag, MD, MSc and Xu Cao, PhD who select the topic and presenters. Topics include one basic and one clinical at each session and are selected to encourage scientific cross-talk between clinical and basic investigators.

PAT 796. Advanced Skeletal Biology. 1 Hour.

This course will be divided into a series of modules. Each module will consist of didactic sessions followed by group discussion and a review of the literature relevant to skeletal biology.

PAT 798. Research Problems (Doctoral Level Non-Dissertation). 1-15 Hour.**PAT 799. Doctoral Level Dissertation Research. 1-15 Hour.**

Prerequisites: GAC D

PCD-Pharmaceutical Design Courses**PCD 700. Intro to Drug Design. 3 Hours.****PCD 701. Medicinal Chemistry. 3 Hours.****PCD 721. Lab Research. 5 Hours.****PCD 780. Pharmaceutical Design Journal Club. 1 Hour.****PCD 798. Doctoral Level Non-Dissertation Research. 1-12 Hour.****PE-Physical Education Courses****PE 500. Organization & Admin of PE. 3 Hours.**

This course is designed to provide the student with opportunities to increase his/her knowledge of problems and issues involved in the organization and administration of physical education programs in elementary and secondary schools. Pre-requisites/Co-requisites: PE 136 or equivalent.

Prerequisites: PE 136 [Min Grade: C](Can be taken Concurrently) or PE 136 [Min Grade: C](Can be taken Concurrently)

PE 509. Assessment in Physical Education. 3 Hours.

This course is designed to investigate the basic concepts of measurement and evaluation as applied to physical education. Through lecture and laboratory experiences students will acquire knowledge and skills related to the assessment and interpretation of student status, teacher effectiveness, and program effectiveness. Concurrent enrollment in PE 589 and admission to the Alternative Masters Program.

PE 511. Elementary School Physical Education. 3 Hours.

Nature and content of a developmentally appropriate elementary physical education program.

Prerequisites: PE 136 and PE 305

PE 520. Fitness and Motor Skill Acquisition. 3 Hours.

The purpose of this course is to provide students with the opportunity to acquire the knowledge and the skills necessary to analyze and appropriately teach motor skills and design developmentally appropriate fitness activities for adolescents.

Prerequisites: PE 136 [Min Grade: C] and PE 305 [Min Grade: C]

PE 520L. Sport Skill Proficiency. 1 Hour.

Acquire the knowledge and the skills necessary to teach the critical elements needed to perform all basic sport skills. Students will demonstrate skill proficiency in the sport skills as well as the ability to teach others to perform the skills.

Prerequisites: PE 305 [Min Grade: C]

PE 585. Principles of Exercise Leadership. 3 Hours.

This course studies participant screening, risk stratification, and exercise assessment/testing and prescription to apparently healthy, special and diseased populations. Successful communication, programming and management principles for health/fitness settings will also be examined.

Prerequisites: PE 400 [Min Grade: C] or PE 637 [Min Grade: B]

PE 589. Physical Education Instructional Strategies. 3 Hours.

This course will focus on information to help potential physical educators attain teaching skills and knowledge necessary to design, implement and evaluate developmentally appropriate K-12 physical education programs. Students will gain hands-on experience with small groups of students in elementary, middle and high school settings. Prerequisite: Admission to AMP or permission of instructor. Co-Requisite: PE 509.

PE 601. Introduction to Sports Administration. 3 Hours.**PE 607. Principles of Coaching. 3 Hours.****PE 615. Sport Facility Planning. 3 Hours.****PE 618. The Olympic Games. 3 Hours.**

The Olympic Games will be investigated through a brief analysis of the history of the Ancient Olympic Games, an in-depth analysis of the Modern Olympic Games and the development of their global social, economic, political and cultural significance.

PE 623. Philosophical Perspectives in Sport Administration. 3 Hours.

This course will address conceptual skills of an administrator beyond management skills, including addressing current trends and issues in education, physical education and athletics.

Prerequisites: EPR 692 [Min Grade: C]

PE 630. Mechanical Analysis of Motor Skills. 3 Hours.

Prerequisites: PE 307 [Min Grade: C]

PE 631. Foundations of Physical Education. 3 Hours.**PE 632. Supervision of Physical Education. 3 Hours.****PE 635. Principles of Management in Sports. 3 Hours.**

This course is designed to give students an overview of the duties, responsibilities and problems facing athletic administrators in today's sports-conscious society.

PE 636. Current Readings in Physical Education. 3 Hours.**PE 637. Physiology of Exercise I. 3 Hours.****PE 638. Physiology of Exercise II. 3 Hours.**

Prerequisites: PE 637 [Min Grade: C]

PE 639. Exercise Prescription for High Risk Populations. 3 Hours.

Advanced Techniques in Exercise Testing.

Prerequisites: PE 637 [Min Grade: C]

PE 640. Advanced Techniques in Conditioning the Athlete. 3 Hours.

Prerequisites: PE 400 [Min Grade: C] or PE 637 [Min Grade: C]

PE 642. Practicum in Physiology. 3 Hours.

Prerequisites: PE 637 [Min Grade: C] and PE 638 [Min Grade: C]

PE 643. Curriculum Development in Physical Education. 3 Hours.**PE 645. Advanced Motor Development. 3 Hours.****PE 647. Teaching Strategies and Issues in K-12 PE. 3 Hours.**

Teaching Strategies and Issues in Elementary PE.

PE 649. Adapted Physical Education. 3 Hours.

Prerequisites: PE 645 [Min Grade: C]

PE 650. Social Aspects of Sport. 3 Hours.

This course is a study of sport from a sociological perspective. Physical Educators, Coaches, and the sport novice alike will benefit from discussion that stimulates critical-thought concerning sport and how it relates to social life in modern culture. This course will help students view sport as more than just a reflection of the world in which they live. A global, issues-oriented approach to study the role of sports in society, sport-related controversies and the issues that cause them.

PE 651. Issues and Problems in Coaching. 3 Hours.

This course is an introductory study of issues and problems, or dilemmas, that often arise in sport, physical activity and recreation programs and could potentially result in legal situations. Students in this course will benefit from discussion and case studies from the professional literature that can help them effectively manage sport-related programs and ultimately avoid legal problems. This course will approach issues and problems from a practical perspective as they relate to the legal duties of individuals who coach in youth, recreation, interscholastic, or intercollegiate settings. The course will include a study of current issues and problems in sport, physical activity and recreation through examination and critical analysis.

PE 652. Measurement and Evaluation of Athletes. 3 Hours.

This course is primarily designed to help athletic coaches locate, select, and construct quality sport skill tests. Additional attention will be given to body composition, fitness, and psychological assessment of athletes. Students will review reasons why coaches should measure and evaluate athletes, and survey sound testing procedures.

PE 653. Plan/Conduct Act Prog for Indiv with Disabilities. 3 Hours.

The purpose of this course is to provide students with knowledge and skills needed to meet the unique fitness and physical activity needs of individuals with various disabilities. Through class discussions and course assignments, students will learn to design and implement personal training/fitness programs and disability sports/recreation programs for individuals with disabilities based on assessments of health related strengths and needs.

PE 655. Motor Learning. 3 Hours.**PE 656. Advanced Sport Psychology. 3 Hours.****PE 663. Adventure-Based Counseling. 3 Hours.**

Improvement of self-concept and social life skills through physical, spiritual, emotional, and mental development in creative activity outdoors. Natural environment used as a learning laboratory for leadership, teamwork, problem solving, decision-making, conflict resolution, and physical fitness.

PE 664. Challenge Crse Fund II. 3 Hours.

This course continues introduces students to the background, philosophy, ethical issues, and risk management required to high ropes facilitation. Introduces students to a variety of high challenge course initiatives used for learning and problem solving, trust team building, and self-confidence and communication skills. How to present high challenge courses initiatives to diverse groups will be emphasized. Specific attention will be given to addressing learners of different ages and varying abilities. Additionally, an overview will be given of how counseling and ropes courses experiences can be integrated.

PE 665. Adventure Processing and Facilitation. 3 Hours.

This course provides the skills necessary for facilitating a variety of client groups educational, recreational, corporate, and therapeutic indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, de-briefing, use of metaphors and transfer of learning. Activities are used to facilitate leadership, teamwork, problem solving, decision-making and conflict resolution. This knowledge will enhance students' ability to adapt their program to various groups. How to facilitate and lead group discussion with diverse groups will be emphasized.

PE 666. Organization and Administration of Adventure Education. 3 Hours.

Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk management for the administrator, operations and file management, legal issues, accreditation standards, staff recruitment, hiring and training, marketing, fiscal management. Special attention will be given to managing an universally designed challenge course.

PE 672. Advanced Treatment of Athletic Training. 3 Hours.

Advanced Treatment of Athletic Injuries.

PE 674. Sport Performance and Nutrition. 3 Hours.**PE 690. Seminar in Sports Administration. 3 Hours.****PE 693. Internship in Sports Administration. 3-6 Hours.****PE 694. Special Projects in Physical Education. 1-6 Hour.****PE 695. Problems in Physical Education. 3-6 Hours.****PE 696. Elementary/Secondary Physical Education Internship. 9 Hours.**

Supervised Research in Physical Education.

PE 697. Advanced Field Experience in Physical Education. 3-6 Hours.

Prerequisites: PE 488 [Min Grade: C] or PE 547 [Min Grade: C]

PE 698. Coaching Internship (Individual Sport). 3 Hours.

Prerequisites: PE 407 [Min Grade: C] or PE 607 [Min Grade: C]

PE 699. Thesis Research. 1-6 Hour.

Prerequisites: GAC M

PE 710. Special Topics in Physical Education. 3 Hours.**PE 715. Advanced Field Experience in Physical Education. 3-6 Hours.**

Prerequisites: PE 647 [Min Grade: C]

PE 718. Practicum in Exercise Physiology. 3 Hours.**PE 720. Research Design and Methodology. 3 Hours.**

Prerequisites: EPR 692 [Min Grade: C]

PE 726. Supervised Research in Physical Education. 3-6 Hours.

Prerequisites: EPR 609 [Min Grade: C] and EPR 692 [Min Grade: C]

PE 728. EDS Thesis Research. 3-6 Hours.**PE 729. Physical Education Seminar. 3 Hours.**

Prerequisites: EPR 609 [Min Grade: C] and EPR 692 [Min Grade: C]

PH-Physics Courses**PH 502. Instructional Physical Science. 4 Hours.**

Modern Physics for Teachers.

PH 502L. Instructional Physical Science Laboratory. 0 Hours.

Design of Physical Science Labs and Detailed Instructional Plans.

PH 505. Studies in Physics Teaching II. 3 Hours.

Development of new curricula, apparatus, and techniques of presentation of concepts in physics. Prerequisite: Permission of instructor.

PH 507. Physical Science for Teachers I. 3 Hours.

Concepts of physical science. Laboratory includes evaluation of experiments and equipment for lecture demonstrations. Prerequisite: Permission of instructor.

PH 508. Physical Science for Teachers II. 3 Hours.

Concepts of physical science. Laboratory includes evaluation of experiments and equipment for lecture demonstrations. Prerequisite: Permission of instructor.

PH 520. Introduction to Methods in Theoretical Physics I. 3 Hours.

Vector calculus. Curvilinear coordinate systems; commonly encountered ordinary differential equations and special functions; complex variables and contour integration partial differential equations, including solutions by Green function methods. Prerequisite: Permission of instructor.

Prerequisites: PH 222 [Min Grade: C] and MA 252 [Min Grade: C]

PH 525. Applications of Contemporary Optics I. 3 Hours.

Applied geometrical optics. Refraction and reflection, paraxial optics, thick lens, matrix theory, optical aberrations, optical systems, and optical design using computer simulations.

Prerequisites: PH 222 [Min Grade: C]

PH 526. Applications of Contemporary Optics II. 3 Hours.

Applied wave optics. Fresnel equations, optical interference, optical interferometry, coherence, diffraction, lasers, and Gaussian beam propagation.

Prerequisites: PH 525 [Min Grade: C]

PH 527. Geometrical Optics. 4 Hours.

Properties of optical systems. Lenses, mirrors, and stops; aberrations; rays and wave fronts, optical instruments; aspheric components.

Prerequisites: PH 222 [Min Grade: C]

PH 527L. Geometrical Optics Lab. 0 Hours.

Geometrical Optics Lab.

PH 528. Physical Optics. 4 Hours.

Interference and diffraction phenomena; emission, propagation, and absorption of radiation; polarization and dispersion; stimulated emission.

Prerequisites: PH 527 [Min Grade: C]

PH 528L. Physical Optics Lab. 0 Hours.

Physical Optics Lab.

PH 529. Applications of Contemporary Optics III. 3 Hours.

Applied optical interactions with materials linear and nonlinear polarization phenomena, optical properties of materials, anisotropic optics, electro-optics, and nonlinear optics.

Prerequisites: PH 526 [Min Grade: C]

PH 532. Statistical Thermodynamics I. 3 Hours.

Statistical basis of laws of thermodynamics; ensembles and partition functions; quantum statistics of ideal gases, including photons and electrons; applications to solids, real gases, liquids, and magnetic systems; transport theory.

Prerequisites: PH 351 [Min Grade: C]

PH 533. Statistical Thermodynamics II. 3 Hours.

Statistical basis of laws of thermodynamics; ensembles and partition functions; quantum statistics of ideal gases, including photons and electrons; applications to solids, real gases, liquids, and magnetic systems; transport theory.

Prerequisites: PH 532 [Min Grade: C]

PH 545. Electromagnetic Theory I. 3 Hours.

Electromagnetic theory approached from standpoint of fields and using Maxwell's equations.

Prerequisites: PH 420 [Min Grade: C] or MA 444 [Min Grade: C]

PH 546. Electromagnetic Theory II. 3 Hours.

Electromagnetic theory approached from standpoint of fields and using Maxwell's equations.

Prerequisites: PH 545 [Min Grade: C]

PH 550. Introduction to Quantum Mechanics I. 3 Hours.

Principles of quantum mechanics; their application to particle waves, angular momentum, tunneling, radiation, and selection rules; perturbation and variational methods.

Prerequisites: PH 351 [Min Grade: C] and PH 562 [Min Grade: C]

PH 551. Introductory Quantum Mechanics II. 3 Hours.

Principles of quantum mechanics; their application to particle waves, angular momentum, tunneling, radiation, and selection rules; perturbation and variational methods.

Prerequisites: PH 550 [Min Grade: C]

PH 552. Introduction to Quantum Mechanics III. 2 Hours.**PH 553. Solid State Physics I. 3 Hours.**

Properties of crystal lattices, lattice dynamics, lattice imperfections, and bonding energies; electronic properties of dielectrics, semiconductors, and metals; ferroelectric, magnetic, and optical properties of solids.

Prerequisites: PH 551 [Min Grade: C]

PH 554. Solid State Physics II. 3 Hours.

Properties of crystal lattices, lattice dynamics, lattice imperfections, and bonding energies; electronic properties of dielectrics, semiconductors, and metals; ferroelectric, magnetic, and optical properties of solids.

Prerequisites: PH 553 [Min Grade: C]

PH 557. Introduction to Nuclear Physics. 3 Hours.**PH 561. Classical Mechanics I. 3 Hours.**

Kinematics and dynamics, including central forces, rotating coordinate systems, and generalized coordinates; Lagrangian and Hamiltonian.

Prerequisites: PH 222 [Min Grade: C] and MA 252 [Min Grade: C]

PH 562. Classical Mechanics II. 3 Hours.

Kinematics and dynamics, including central forces, rotating coordinate systems, and generalized coordinates; Lagrangian and Hamiltonian.

Prerequisites: PH 561 [Min Grade: C]

PH 571. Atomic and Molecular Physics. 3 Hours.

Applications of quantum mechanics to structure and spectra of atoms and small molecules; use of symmetry in understanding and describing molecular vibrations and bonding.

Prerequisites: PH 551 [Min Grade: C]

PH 575. Intro to Biophysics I. 3 Hours.

Application of physical techniques and analytical methods of selected biological problems. Permission of instructor.

Prerequisites: PH 352 [Min Grade: C]

PH 576. Intro to Biophysics II. 3 Hours.

Application of physical techniques and analytical methods of selected biological problems. Permission of instructor.

Prerequisites: PH 575 [Min Grade: C]

PH 580. Classical Physics. 3 Hours.**PH 581. Laser Physics I. 3 Hours.**

Physical principles of laser operation and design. Spontaneous and stimulated emission, population inversion, light amplification, laser resonators, Q-switching, mode-locking, pulse shortening techniques, spectral narrowing, and tunable lasers. Individual types of lasers will be considered. Practical applications of lasers will be treated in detail.

Prerequisites: PH 222 [Min Grade: C]

PH 582. Laser Physics II. 3 Hours.

Physical principles of laser operation and design. Spontaneous and stimulated emission, population inversion, light amplification, laser resonators, Q-switching, mode-locking, pulse shortening techniques, spectral narrowing, and tunable lasers. Individual types of lasers will be considered. Practical applications of lasers will be treated in detail.

Prerequisites: PH 581 [Min Grade: C]

PH 583. Atomic and Nuclear Physics. 3 Hours.

Prerequisites: PH 352 [Min Grade: C]

PH 584. Atomic and Nuclear Physics. 3 Hours.

Prerequisites: PH 583 [Min Grade: C]

PH 585. Laser Spectroscopy. 3 Hours.

Practical applications of lasers and modern techniques and instrumentation in laser spectroscopy.

Prerequisites: PH 222 [Min Grade: D]

PH 586. Semiconductor Materials in Modern Technology. 3 Hours.

Brief review of electronic materials with emphasis on traditional and cutting edge Si technology. Competing and complementary semiconductors covered in standard lecture and seminar style. Materials: compound and tertiary semiconductors, organic semiconductors, wide bandgap semiconductors. Applications: optical and chemical sensors, microwave electronics, high power electronics, lasers. Specific applications/ materials determined by student interest.

Prerequisites: PH 352 [Min Grade: C] or EE 351 [Min Grade: C] or CH 326 [Min Grade: C]

PH 587. Nanoscale Science and Applications. 3 Hours.

Nanoscale Science and Applications. Physics of electronic, mechanical, and biological properties of materials at the nanoscale level approaching one billionth of a meter. The applications of nanoscale materials in electronic, mechanical, and biomedical systems will be emphasized. Special tools in synthesis and characterization of nanomaterials will be discussed.

PH 589. Applications of Modern Physics. 3 Hours.**PH 590. Preparations for Teaching. 1-3 Hour.**

This class is intended to help teaching assistants prepare for successful teaching experiences. The course will emphasize a foundation of practical knowledge related to expectations and duties shared by teachers in higher education, as well as an opportunity to read, reflect, and discuss current research related to teaching and learning at the university level.

PH 591. Advanced Physics Laboratory I. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 592. Advanced Physics Laboratory II. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 593. Advanced Physics Laboratory III. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 594. Computers in Physics. 3 Hours.**PH 595. Computers in Physics. 3 Hours.****PH 597. Special Topics in Physics. 1-3 Hour.****PH 610. Classical Mechanics I. 3 Hours.**

Applications of methods of LaGrange, Hamilton, Poisson, and Hamilton-Jacobi to such classical problems as central force, small oscillation, and rigid body motions.

Prerequisites: PH 562 [Min Grade: C]

PH 635. Statistical Mechanics. 3 Hours.

Interpretation of macroscopic phenomena from microscopic principles; fundamental laws of statistical mechanics; applications to simple equilibrium systems, phase transitions, and transport problems.

Prerequisites: PH 551 [Min Grade: C]

PH 650. Electromagnetic Theory I. 3 Hours.

Boundary value and Green function methods for solving potential problems; fields in dielectric, magnetic media, and radiation fields.

Prerequisites: PH 546 [Min Grade: C]

PH 651. Electromagnetic Theory II. 3 Hours.

Boundary value and Green function methods for solving potential problems; fields in dielectric, magnetic media, and radiation fields.

Prerequisites: PH 650 [Min Grade: C]

PH 652. Electromagnetic Theory III. 3 Hours.

Electromagnetic Theory.

PH 653. Solid State Physics I. 3 Hours.

Structure and dynamics of solids; optical, magnetic, and transport properties.

Prerequisites: PH 551 [Min Grade: C]

PH 654. Solid State Physics II. 3 Hours.

Structure and dynamics of solids; optical, magnetic, and transport properties.

Prerequisites: PH 653 [Min Grade: C]

PH 655. Advanced Solid State Laboratory. 1-3 Hour.

Thin film X-ray diffraction, Raman spectroscopy in materials characterization, electron paramagnetic resonance, and thin film deposition.

Prerequisites: PH 653 [Min Grade: C] and PH 654 [Min Grade: C]

PH 671. Quantum Mechanics I. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 546 [Min Grade: C] and PH 551 [Min Grade: C]

PH 672. Quantum Mechanics II. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 671 [Min Grade: C]

PH 673. Applications of Quantum Mechanics. 3 Hours.

Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions.

Prerequisites: PH 671 [Min Grade: C] and PH 672 [Min Grade: C]

PH 697. Special Topics in Physics. 1-12 Hour.

Topics of current interest, such as theoretical physics, computational physics, experimental techniques. May be repeated for credit. 1-12 hours.

PH 698. Nonthesis Research. 1-12 Hour.

May be repeated for credit.

PH 699. Research for Thesis. 1-12 Hour.

May be repeated for credit. Prerequisite: Admission to candidacy. 1-12 hours.

Prerequisites: GAC M

PH 710. Advanced Classical Mechanics I. 3 Hours.

Analysis of dynamics, including rigid body motion, featuring the LaGrange formulation, introduction to the Hamiltonian, formulation, Poisson brackets, analyses in nonrelativistic applications.

Prerequisites: PH 562 [Min Grade: C]

PH 711. Advanced Classical Mechanics II. 3 Hours.

Analysis of dynamics, including rigid body motion, featuring the LaGrange formulation, introduction to the Hamiltonian, formulation, Poisson brackets, analyses in nonrelativistic applications.

Prerequisites: PH 710 [Min Grade: C]

PH 715. Advanced Statistical Mechanics. 3 Hours.

Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems.

Prerequisites: PH 533 [Min Grade: C] or PH 635 [Min Grade: C]

PH 716. Advanced Statistical Mechanics. 3 Hours.

Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems.

Prerequisites: PH 715 [Min Grade: C]

PH 732. Growth and Characterization of Thin Films I. 3 Hours.

Basics of vacuum science. Methods of thin film deposition. Nucleation, evolution of microstructure and surface morphology of thin films.

Simulation of growth processes. Thin film characterization techniques (SEM/SIM, TEM, SPM, SPS/AES, XRD, optical and mechanical measurements). Demonstrations on thin-film deposition and basic characterization of film microstructure and properties. Prerequisites: PH 553/653 and PH554/654 or permission of instructor. Lecture and demonstration. 3 semester hours.

Prerequisites: (PH 453 [Min Grade: C] or PH 553 [Min Grade: C]) and (PH 454 [Min Grade: C] or PH 554 [Min Grade: C])

PH 733. Growth and Characterization of Thin Films II. 3 Hours.

Basics of vacuum science. Methods of thin film deposition. Nucleation, evolution of microstructure and surface morphology of thin films.

Simulation of growth processes. Thin film characterization techniques (SEM/SIM, TEM, SPM, XPS/AES, XRD, optical and mechanical measurements). Demonstrations on thin-film deposition and basic characterization of film microstructure and properties. Prerequisites: PH553/653 and PH554/654 or permission of instructor. Lecture and demonstrations. 3 semester hours.

Prerequisites: (PH 453 [Min Grade: C] or PH 553 [Min Grade: C]) and (PH 454 [Min Grade: C] or PH 554 [Min Grade: C])

PH 745. Molecular Spectroscopy. 3 Hours.

Infrared, Raman, and ultraviolet techniques applied to study of molecular properties, including rotation-vibration spectra and spectra of crystalline solids.

PH 746. Theoretical Nuclear Physics. 3 Hours.**PH 747. Theoretical Nuclear Physics. 3 Hours.****PH 750. Classical Electrodynamics I. 3 Hours.**

Static and time-varying fields in vacuum and in matter, radiation fields, solutions and implications of Maxwell's equation utilizing advanced mathematical methods.

Prerequisites: PH 546 [Min Grade: C]

PH 751. Classical Electrodynamics II. 3 Hours.

Static and time-varying fields in vacuum and in matter, radiation fields, solutions and implications of Maxwell's equation utilizing advanced mathematical methods.

Prerequisites: PH 750 [Min Grade: C]

PH 752. Classical Electrodynamics III. 3 Hours.

Classical Electrodynamics.

PH 753. Solid State Physics I. 3 Hours.

Properties of electrons and photons in crystal lattices; electromagnetic interactions with solids; lattice defects.

PH 754. Solid State Physics II. 3 Hours.

Properties of electrons and photons in crystal lattices; electromagnetic interactions with solids; lattice defects.

Prerequisites: PH 753 [Min Grade: C]

PH 755. Advanced Solid State Physics III. 2 Hours.

Advanced Solid State Physics II.

Prerequisites: PH 753 [Min Grade: C] and PH 754 [Min Grade: C]

PH 760. Methods of Mathematical Physics I. 3 Hours.

Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms.

PH 761. Methods of Mathematical Physics II. 3 Hours.

Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms.

PH 762. Computational Physics I. 3 Hours.

Numerical techniques for solution of differential, integral, and matrix equations of physics; computer simulations of physical phenomena; optimization problems.

Prerequisites: PH 545 [Min Grade: C] and PH 551 [Min Grade: C] and PH 561 [Min Grade: C]

PH 771. Quantum Mechanics I. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 546 [Min Grade: C] and PH 551 [Min Grade: C]

PH 772. Quantum Mechanics II. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 771 [Min Grade: C]

PH 773. Applications of Quantum Mechanics. 3 Hours.

Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions.

Prerequisites: PH 771 [Min Grade: C] and PH 772 [Min Grade: C]

PH 791. Physics Seminar I. 1 Hour.

Topics of current interest in physics, presented by graduate students, faculty, and visitors. Required each term of all full-time graduate students.

PH 792. Physics Seminar II. 1 Hour.

Topics of current interest in physics, presented by graduate students, faculty, and visitors. Required each term of all full-time graduate students.

PH 793. Scientific Communications I. 1 Hour.

Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication.

PH 794. Scientific Communications II. 1 Hour.

Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication.

Prerequisites: PH 793 [Min Grade: C]

PH 797. Special Topics in Physics. 1-12 Hour.

Topics of current interest, such as group theory, medical physics, computational methods, biological physics, materials physics, optics, and space physics. May be repeated for credit.

PH 798. Non-Dissertation Research. 1-12 Hour.

Permission of instructor.

PH 799. Research for Dissertation. 1-12 Hour.

Admission to candidacy.

Prerequisites: GAC D

PHL-Philosophy Courses**PHL 517. Principles of Scientific Integrity. 3 Hours.**

Principles of Scientific Integrity - Survey of ethical issues and principles in the the practice of science. Permission of Instructor Only.

PHL 590. Directed Readings. 1-3 Hour.

Directed Readings in special areas or topics in philosophy; honors thesis supervision. Permission of Instructor.

PHL 770. Philosophy of Science. 3 Hours.

Philosophy of Science - Overview of philosophy of science with attention to foundational debates in social sciences, and social constructivist views of scientific knowledge. Permission of Instructor Only.

PHL 790. Problems ProSeminar. 3 Hours.

Philosophic problems of current interest in graduate and professional education. Specific issues in cognitive science, the arts, or ethics and public policy may be selected for analysis. Content varies depending upon instructor and student demand.

PHL 791. Problems ProSeminar. 3 Hours.

Philosophic problems of current interest in graduate and professional education. Specific issues in cognitive science, the arts, or ethics and policy may be selected for analysis. Content varies depending upon instructor and student demand.

PHL 792. Problems ProSeminar. 3 Hours.

Philosophic problems of current interest in graduate and professional education. Specific issues in cognitive science, the arts, or ethics and public policy may be selected for analysis. Content varies depending upon instructor and student demand.

PHR-Pharmacology Courses**PHR 701. Adv Prin Pharm-Sys&Pharmacok 1. 3 Hours.****PHR 702. Adv Prin Pharm-Sys&Pharmacok 2. 3 Hours.****PHR 720. Laboratory Rotation in Pharmacology. 1-12 Hour.****PHR 735. Nucleotide Metabolism and Chemotherapy. 3 Hours.**

Principles, characteristics and therapeutics of nucleotide metabolism. This course is designed for second year and above graduate students.

PHR 744. Protein Mass Spectrometry. 3 Hours.**PHR 752. Pharmacokinetic Analysis. 1 Hour.**

The course will provide a detailed introduction to the analysis of pharmacokinetic data preferably generated as part of the student's research. Descriptions of the use of appropriate analytical programs and the interpretation of pharmacokinetic data will be the major focus of this course.

PHR 754. Model Sys for Drug Discovery. 2 Hours.

This course will focus on the use of different genetically tractable model systems and their roles in drug discovery and drug development. The course will discuss the properties, benefits and deficiencies of major model systems used in drug discovery including yeast, zebrafish, xenographs, and genetically modified mouse strains.

PHR 790. Advanced Pharmacology Seminar. 1 Hour.**PHR 798. Doctoral Level Non-Dissertation Research. 1-12 Hour.****PHR 799. Doctoral Level Dissertation Research. 1-12 Hour.**

Prerequisites: GAC D

PHS-Physical Sciences Courses**PHY-Physiology and Biophysics Courses****PHY 698. Master s Level Non-Thesis Research in Cellular and Molecular Physiology. 1-10 Hour.**

Master level nonthesis research hours.

PHY 699. Master Level Thesis Research in Cellular and Molecular Physiology. 1-10 Hour.

Master Level Thesis Research Hours Must be admitted to master level candidacy to take this course.

Prerequisites: GAC M

PHY 700. Medical Physiology. 8 Hours.

General principles of organ system physiology 999999.

PHY 701. Physiology for Graduate Students. 3 Hours.

Physiology for graduate students.

PHY 702. Physiology for Optometry Students. 6 Hours.

General principles of organ system physiology.

PHY 7020. Physiology. 4 Hours.**PHY 703. Physiology for Dental Students. 6 Hours.**

Physiology for Dental Students: General principles of cell and organ system physiology.

PHY 720. Biophysics of Membrane Excitability. 3,4 Hours.

Biophysics in membrane excitability.

PHY 751. Student Seminars in Physiology. 1 Hour.

Mandatory for Physiology graduate students except for those graduating. Each student will be required to present a 30 minute seminar to fellow students.

PHY 760. Biology of Intracrines. 3 Hours.

Intracrinology is the study of hormone actions within a cell in contrast to autocrine, paracrine, and endocrine mechanisms of hormone action. An intracellular site of action of peptide hormone action is not uncommon and the local synthesis and function of over 75 intracrine proteins has been described. Intracrines are thought to participate in the regulation of numerous cellular functions in health and disease. In this course, the synthesis, metabolism, action and significance of selected intracrine species (i.e., steroids, hormones, cytokines, growth factors, enzymes) will be examined for various target tissues (i.e., brain, muscle, heart, fat, gonads, bones, and the immune system). The class will be tailored to the interests of the students and related to the field of intracrines. For each intracrine, we will review the background, describe the effects of the intracrine and discuss the importance of this biology for translational research. The class will be limited to 20 students and meet once a week for two hours for 12 weeks. No prerequisite course(s) are required. Student evaluation will be based on participation in discussion.

PHY 770. Clinical and Translational Science (CTS) Training Program. 2 Hours.

The CTS Training Program is designed for those motivated to further their clinical and translational research training. Trainees are identified by their Department Chairs or Division Directors, based on having substantial potential for an academic career in clinical research. Faculty and fellows pursuing this program will be prepared to conduct clinical and translational research responsibly and maintain a career focus on clinical and translational research. The program is divided into the following nine modules: Clinical Trials, Epidemiology, Biostatistics, Ethics, Clinical Genetics Research, Behavioral Research, Outcomes Research, Dissemination of Results, and Grant Writing and Funding Opportunities.

PHY 780. Center Exercise Medicine JC. 1 Hour.

Understanding the mechanisms underlying exercise-induced adaptations and their clinical utility in disease treatment and prevention is truly an interdisciplinary effort. Students will interact with scientists and clinicians from several disciplines, and will present and discuss the latest and most impactful exercise-based research in both humans and animal model systems.

PHY 787. Electronics in Physiology. 2 Hours.

This course will cover: 1) an introduction to electronics; and 2) how electronics is used to study physiologic phenomena.

PHY 790. Selected Topics in Physiology I. 1-4 Hour.

Selected Topics in Physiology: Literature search, seminars, discussion of research in selected areas of physiology.

PHY 791. Selected Topics in Physiology II. 1-4 Hour.

Selected Topics in Physiology II: From Genetics to Physiology - Role of ionchannels and cell signaling in normal function as well as dysfunctions and mutations that lead to disease.

PHY 792. Selected Topics in Physiology III. 1-4 Hour.

Selected Topics in Physiology III: Literature search, seminars, discussion of research in selected areas of physiology.

PHY 793. Selected Topics in Physiology IV. 1-4 Hour.

Selected Topics in Physiology IV: Literature search, seminars, discussion of research in selected areas of physiology.

PHY 794. Selected Topics in Physiology V. 1-4 Hour.

This course will focus on a variety of topics in cardiovascular pathophysiology ranging from oxidative stress and cardiovascular disease, cellular and molecular mechanisms of heart failure, capacitative calcium entry and cardiovascular hypertrophy the effects of diabetes on cardiovascular physiology, and control of cardiovascular function by neurohormones and cytokines.

PHY 796. Physiology Seminars. 3 Hours.

Seminars in Physiology would require students to attend at least 80% of the departmental seminars and luncheons throughout the year. Each student would be required to host at least one seminar during the year; hosting would entail introducing the speaker at the seminar and meeting with the co-sponsor one-on-one during the day.

PHY 798. Doctoral Level Non-Dissertation Research in Cellular and Molecular Physiology. 1-15 Hour.

Non-Dissertation Research.

PHY 799. Doctoral Level Dissertation Research in Cellular and Molecular Physiology. 1-15 Hour.

Dissertation Research Must have approved 5 member committee and be approved by graduate dean for doctoral candidacy. Must have at least 2 semesters of candidacy doctoral research to graduate.

Prerequisites: GAC D

PSC-Political Science Courses**PSC 501. Seminar in American Government. 3 Hours.**

Multiple theoretical approaches employed in study of American political culture, behavior, institutions, and policy making; their usefulness in understanding domestic politics. (AG).

PSC 502. Seminar in Comparative Politics. 3 Hours.

Multiple theoretical approaches employed in study of comparative politics; their usefulness in cross-national analysis of political systems. (CP).

PSC 503. Seminar in International Relations. 3 Hours.

Multiple theoretical approaches employed in study of International relations; their usefulness in investigating issues in world politics. (IR).

PSC 504. Seminar in Political Theory. 3 Hours.

Multiple approaches employed in study of political theory; their usefulness in forming normative judgements. (PT).

PSC 505. Urban Affairs Seminar. 3 Hours.

Investigation of topics of current interest in urban studies.

PSC 515. Political Economy and Race in Birmingham. 3 Hours.

This course provides a critical analysis of race in the political economy of Birmingham from the postbellum period to the era of civil rights.

PSC 516. Gays Lesbians and the Politics of Sexual Diversity. 3 Hours.

Examination of lesbian, gay, bisexual, and transgender politics in the U.S. since the mid-twentieth century focusing on the regulation of sexuality and gender, the liberation and assimilationist approaches to political action, and contemporary issues including discrimination in employment, in the military, and in education, domestic partnerships, HIV/AIDS, and family law. (AG).

PSC 521. Politics Planning and Urban Design. 3 Hours.

Relationship among policies, planning, and urban design. (AG).

PSC 530. American Constitutional Law I. 3 Hours.

Decisions of the U.S. Supreme court as related to the development of important doctrines of constitutional law. Role of judiciary; extent of federal executive and legislative power; federal taxing and commerce powers. (AG).

PSC 531. American Constitutional Law II. 3 Hours.

Decisions of the U.S. Supreme Court as related to the development of important doctrines of constitutional law. Guarantees of Bill of Rights regarding both national and state governments; 14th Amendment. (AG).

PSC 561. International Political Economy. 3 Hours.

Increasing interaction of politics and economies in international and transnational arenas of current global systems. (IR).

PSC 565. International Law. 3 Hours.

Historical roots, theoretical foundations, and substantive development of law governing relations among nations; functioning of present international legal system. (IR).

PSC 566. The United Nations. 3 Hours.

Organizational framework, evolving experiences and continuing problems of United Nations system for maintenance of international peace and security and for international economic and social cooperation. (IR).

PSC 571. Contemporary Political Issues. 3 Hours.

Topics of current political importance and interest. Issues identified in class schedule. May be repeated for credit with permission of department chair.

PSC 572. Environmental Policy. 3 Hours.

Institutions, processes, actors, and issues in U.S. and international environmental policy.

PSC 573. Urban Environmental Issues. 3 Hours.

Examination of environmental issues, focus on Birmingham area.

PSC 574. The Politics of Aging. 3 Hours.

Role of aging in political process. Political demands made by elderly, role of aging in political decision making and policy outputs relevant to older population. (AG).

PSC 585. Environmental Disasters. 3 Hours.

Examines the growing worldwide problem of chemical and nuclear accidents with a particular focus on understanding the community impacts of such accidents. Case studies of several chemical and nuclear disasters are reviewed from a multidisciplinary perspective, and the human service and public policy implications of environmental accidents are discussed.

PSC 595. Special Topics in Political Science. 3 Hours.

Group investigation of topics of current interest in political science.

PSC 596. Independent Studies and Special Projects. 1-3 Hour.

Selected readings or research under supervision of member of PSC department.

PSC 597. Honors Research. 3-6 Hours.

Independent research for political science honors students.

PSC 598. Public Affairs Internship. 1-3 Hour.

Individually arranged assignment in public or non-profit agencies or organizations, monitored and evaluated by member of department.

PT-Physical Therapy Courses**PT 700. Human Gross Anatomy. 4 Hours.**

A study of the anatomical structure of the human body includes limbs, back, abdominal wall and cavity. Specific emphasis includes regional study of the relationships between musculoskeletal, nervous, and vascular systems, joint structure, cardiovascular and pulmonary systems, and surveys of selected viscera.

PT 701L. Human Gross Anatomy II Lab. 0 Hours.

Prerequisites: PT 700

PT 702. Functional Anatomy. 3 Hours.

Integrated study of anatomy, kinesiology, muscle biology, and biomechanics to develop an understanding of and ability to analyze normal and pathologic human movement. Includes palpation and surface anatomy.

PT 704. Analysis of Human Movement. 3 Hours.

Study of human movement through an examination of the movement patterns during common motor skills (eg: walking). The kinematics and kinetics related to movement will be studied across the lifespan.

Prerequisites: PT 706 [Min Grade: C](Can be taken Concurrently)

PT 705. Human Movement Dysfunction. 4 Hours.

Study of human movement dysfunction including recovery processes related to injury, impairments associated with pathology and behavior and kinematic/kinetic descriptions of movement dysfunction related to cardiopulmonary, musculoskeletal, and neuromuscular pathology across the lifespan.

Prerequisites: PT 704 [Min Grade: C]

PT 706. Neuroscience I. 4 Hours.

A study of structures and functions of the human nervous system with emphasis on sensory/motor function.

Prerequisites: PT 730 [Min Grade: C]

PT 707. Neuroscience II. 3 Hours.

Study of the theories of motor control and motor learning will serve as a foundation for the understanding how the CNS is organized in relation to human movement.

Prerequisites: PT 706 [Min Grade: C]

PT 711. PT Examination I. 2 Hours.

Introduction to the physical therapy examination process which includes history taking, systems review, and tests and measures. Emphasis will be placed on systems review and medical screening for each of the major systems. Overview of the major types of tests and measures employed by physical therapists and the type of data generated with a focus on self-care for patient.

PT 712. Physical Therapy Examination II. 3 Hours.

Continuation of Physical Therapy I with focus on knowledge and skills needed to test and measure strength, range of motion, and posture.

Prerequisites: PT 711 [Min Grade: C]

PT 713. Physical Therapy Intervention I. 3 Hours.

Introduction to the components and process of physical therapy intervention. Emphasis on beginning communication & documentation skills and basic procedural interventions of patient transfers, gait with assistive devices, superficial physical agents, massage, and passive range of motion. Overview of major categories of procedural interventions utilized by physical therapists.

PT 714. Physical Therapy Intervention II. 1-2 Hour.

Procedures and techniques for the design and implementation of fundamental therapeutic exercise; recognizing impairments in body function and structure and activity limitations amenable to physical therapy; students will utilize therapeutic exercise interventions for prevention and rehabilitation of movement dysfunction and disability.

Prerequisites: PT 713 [Min Grade: C]

PT 715. Physical Therapy Intervention III. 3 Hours.

The study and use of knowledge and skills needed to select and use both electrodiagnostic and electrotherapeutic modality interventions for various impairments and functional limitations. Emphasis will be placed on integrating electrical evaluation, electrical and deep heat therapy with previously learned examination, evaluation, and intervention skills. An overview of integument system repair and the management of chronic wounds will be discussed with an emphasis on examination, clinical decision making, and intervention.

Prerequisites: PT 712 [Min Grade: C]

PT 720. Pathology and Pharmacology for Movement Disorders I. 3 Hours.

Basic principles of pathology and pharmacology. Medical and surgical management of disorders involving the cardiovascular/pulmonary, musculoskeletal, neuromuscular, endocrine, integumentary, genitourinary, and GI systems. For each disease discussed, the diagnosis, medical, surgical, and pharmacological management will be included, as appropriate.

Prerequisites: PT 730 [Min Grade: C]

PT 721. Pathology and Pharmacology for Movement Disorders II. 3 Hours.

Basic principles of pathology and pharmacology. Medical and surgical management of disorders involving the cardiovascular/pulmonary, musculoskeletal, neuromuscular, endocrine, integumentary, genitourinary, and GI systems. For each disease discussed, the diagnosis, medical, surgical, and pharmacological management will be included, as appropriate.

Prerequisites: PT 720 [Min Grade: C]

PT 730. Essentials of Human Physiology. 3 Hours.

Fundamental principles and concepts of human physiology are covered regarding cell physiology, the cardiovascular, endocrine, gastrointestinal, pulmonary, renal, and skeletal muscle systems as well as thermoregulation of the body. Both cellular and systemic issues are addressed with an emphasis on a mechanistic and integrative approach to understanding function.

PT 731. Human Performance Physiology. 3 Hours.

Course provides fundamental knowledge about the adaptability of human physiological systems in meeting a range of exercise demands. Areas covered include energy transfer during rest and exercise, physiologic and performance adaptations, exercise prescription for healthy adults, and body composition. Research evidence regarding how exercise and physical activity impact health, wellness, and disease is included.

Prerequisites: PT 730 [Min Grade: C]

PT 740. PT Management of Musculoskeletal Dysfunction I. 5 Hours.

Application of biological and physical sciences in understanding musculoskeletal disorders. Diagnosis of common musculoskeletal dysfunctions; clinical decision making concerning treatment and prevention of musculoskeletal disorders. Medical and surgical diagnostic and treatment procedures with implications for rehabilitation. Focus for one course is on the lower quarter and the thoracic spine; focus of the other course is on the upper quarter.

Prerequisites: PT 704 [Min Grade: C]

PT 741. PT Management of Musculoskeletal Dysfunction II. 5 Hours.

Application of biological and physical sciences in understanding musculoskeletal disorders. Diagnosis of common musculoskeletal dysfunctions; clinical decision making concerning treatment and prevention of musculoskeletal disorders. Medical and surgical diagnostic and treatment procedures with implications for rehabilitation. Focus for one course is on the lower quarter and the thoracic spine; focus of the other course is on the upper quarter.

Prerequisites: PT 740 [Min Grade: C]

PT 743. PT Management of Cardiopulmonary Dysfunction. 1-3 Hour.

Physical therapy examination, evaluation, diagnosis, prognosis, and intervention for patients with primary and secondary disorders involving the cardiovascular/pulmonary system.

Prerequisites: PT 731 [Min Grade: C]

PT 744. PT Management of Neuro Dysfunction I. 4 Hours.

Application, analysis, and synthesis of principles of neurophysiologic rehabilitation in physical therapy examination, evaluation, diagnosis, and intervention.

Prerequisites: PT 721 [Min Grade: C]

PT 746. Physical Therapy Management of Neuromuscular Dysfunction II. 4 Hours.

Continuation of PT 744 Application, analysis and synthesis of principles of neurophysiologic rehabilitation in physical therapy examination, evaluation, diagnosis, prognosis and intervention.

Prerequisites: PT 744 [Min Grade: C]

PT 760. PT Professional Practice I. 2 Hours.

Introduction to the profession of physical therapy, including history, APTA, and scope of practice. Introduction to legal, ethical and other regulatory mechanisms that guide the practice of physical therapy. Presentation of cultural diversity issues related to physical therapy practice.

PT 761. PT Professional Practice II. 3 Hours.

Synthesis and application of regulatory mechanisms, legal mandates and ethical principles and theories to issues facing the physical therapy student and the physical therapist functioning in a multifaceted role; values clarification and decision making related to current professional issues. Strategies for dealing with diverse cultures and conflict. Utilization of documentation strategies to promote effective physical therapy practice and payment.

Prerequisites: PT 760 [Min Grade: C]

PT 762. PT Professional Practice III. 3 Hours.

Forces contributing to the health care environment and the effects of this environment on physical therapy practice, research and education. Concepts of health promotion (including wellness and patient education) and the role of the physical therapist in promoting healthy lifestyles in the health care and community settings. Theoretical basis for health behaviors and application of theories to physical therapy practice. Concepts of consultation, program planning, implementation, and evaluation applied to health promotion-oriented physical therapy programs.

Prerequisites: PT 761 [Min Grade: C]

PT 763. PT Professional Practice IV. 2 Hours.

Study of management and supervisory principles and current issues related to physical therapy practice: Practical concepts of marketing, organizational structure, fiscal management, facility planning, design and entrepreneurship.

Prerequisites: PT 762 [Min Grade: C]

PT 764. Prof Practice V - Capstone Exp. 2 Hours.

Integration of all previous coursework applied to reflection of the scope of PT practice: direct patient care, professional growth/development, professional issues, education, consultation, evidence based practice (EBP), communication, cultural competency, and promotion of the profession in achieving Vision 2020. Development and presentation of an individual portfolio that reflects core values, personal and professional growth and accomplishments, and appropriate plans for future professional development.

PT 770. Clinical Education I. 1 Hour.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

PT 771. Clinical Education II. 2 Hours.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

Prerequisites: PT 770 [Min Grade: C]

PT 772. Clinical Education III. 2 Hours.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

Prerequisites: PT 771 [Min Grade: C]

PT 773. Clinical Education IV. 8 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

Prerequisites: PT 772 [Min Grade: C]

PT 774. Clinical Education V. 9 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

Prerequisites: PT 773 [Min Grade: C]

PT 775. Clinical Education VI. 9 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

PT 790. Scientific Inquiry I. 1 Hour.

Introduction to bibliographic information and database searching, annotated bibliographies, critical review of scientific literature, and beginning concepts of the application of research to clinical practice.

PT 791. Scientific Inquiry II. 1 Hour.

This course combines concepts of measurement principles, experimental design, qualitative, survey outcomes research and a review of basic statistical concepts that will prepare the graduate to critically analyze and use the scientific literature to improve clinical practice. Emphases will be placed on understanding the components of a research report and the concepts associated with judging quality of research design as applied to clinical practice.

Prerequisites: PT 790 [Min Grade: C]

PT 792. Scientific Inquiry III. 1 Hour.

Emphasis will be placed on the assessment of research literature in Physical Therapy and the application of research findings to clinical practice. Additionally, advanced clinical research designs will be discussed.

Prerequisites: PT 791 [Min Grade: C]

PT 793. Scientific Inquiry IV. 1 Hour.

This is the final course in the Scientific Inquiry Series. The emphasis will be placed on peer review and professional presentation of scholarly work.

PT 798. Doctoral Level Non-Thesis Research. 1-9 Hour.

Implementation of project activities with data collection, analysis, and preparation of manuscript of scholarly activity project. Student and mentor work together to identify specific project components to be completed during each specific term the course is taken.

Prerequisites: PT 792 [Min Grade: C]

PT 799. Scholarly Activity Project. 1-15 Hour.

Implementation of project activities with data collection, analysis, and preparation of manuscript of scholarly activity project. Student and mentor work together to identify specific project components to be completed during each specific term the course is taken.

Prerequisites: PT 793 [Min Grade: C](Can be taken Concurrently) and GAC D

PTC-Hlth-Focused Pat/Client Mg Courses**PTC 780. Hlth Focused Care in PT & OT. 3 Hours.**

Overview of health promotion principles and health behavior theories as applied in contemporary health care, especially in rehabilitation services. Evidence is presented for the most prevalent preventable chronic diseases/conditions and the health behaviors that contribute to these conditions.

PTC 781. Health Focused Patient/Client Communication and Advocacy. 3 Hours.

Communication and advocacy strategies to effect behavior change at the individual and community level; application of evidence-based and best practice methods/techniques that empower individuals and community to change health-related behaviors.

PTC 782. Health Focused Patient/Client Management I. 3 Hours.

Application of evidence-based and best practice methods/techniques for physical activity/fitness, weight management, and nutrition optimization using a health focused care model.

PTC 783. Health Focused Patient/Client Management II. 3 Hours.

Examines how occupational and physical therapists address smoking cessation, alcohol moderation, sleep health, and stress management using a health focused care model for individuals and community groups. Issues addressed include screening, best practices for interventions, patient education resources, and consultation/referral sources to optimize health outcomes.

PTC 784. Health Focused Care - Synthesis Project. 3 Hours.

Synthesis of content from previous certificate courses to develop a health focused program in the clinical or community setting.

PTDE-Adv Ed Theory Practice Courses**PTDE 730. Advd Edu Theory & Practice I. 3 Hours.**

In-Depth study of learning theory, educational methods and assessment as applied to educational settings in physical therapy and other health professions.

PTDE 731. Advanced Educational Theory and Practice II. 3 Hours.

Continuation of PTDE 730 with emphasis on development and assessment of health professions curricula and programs. Includes strategies for incorporation of accreditation criteria and the scholarship of teaching and learning.

PTDS-Physical Therapy DSC Courses**PTDS 708. Prof Develop Seminar I. 1 Hour.**

Provides students with the context of settings and roles in which an advanced doctoral degree in physical therapy may be used. Addresses topics such as professional ethics, leadership skills, and development of effective presentations and publications.

PTDS 740. Practicum. 1-6 Hour.

Individually designed, directed experience in focus area appropriate to students background, needs, and goals under guidance of a faculty preceptor.

PTDS 772. Clinical Education III. 2 Hours.**PTDS 799. Dissertation Research. 1-15 Hour.**

Admission to candidacy is required.

Prerequisites: GAC A

PTGR-Postprofessional Gen Grad Courses

PTGR 647. Seminar: Interdisciplinary Services/Devel Disabilities. 1-2 Hour.

PTGR 747. Seminar: Interdisciplinary Svcs/Devel Disabilities. 1-2 Hour.

Synthesis of team-based approaches to intervention for infants, children, and youth with known or suspected disabilities. Focus on legislation and policy, team processes and practices, and family-centered applications. Open to upper level students in disciplines which have roles in service provision for the described population.

PUH-Public Health Courses

PUH 602. Narrative in Public Health. 3 Hours.

The purpose of this course is to develop communication skills primarily through written exercises directly relevant to public health. Each exercise will explore and teach students different formats and techniques for communicating complex public health information to different audiences, such as colleagues, the lay public, public officials, or potential future public health students. NOTE: This course is only available to Public Health degree-seeking students.

PUH 690. Public Health Integrative Experience. 3 Hours.

PUH 695. The Public Health Integrative Experience. 1 Hour.

This course is designed to fulfill the requirement that all Master of Public Health degree candidates have the opportunity as defined by CEPH on Public Health "to synthesize and integrate knowledge acquired in course work and other learning experiences to apply theory and principles in a situation that approximates some aspects of professional practice."

Prerequisites: BST 600 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and (EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]) and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

PUH 697. Practice Placement / Internship. 1-9 Hour.

This course is for students in the MPH/MD and MPH/DVM programs. It will be used to satisfy the internship degree requirement.

PY-Psychology Courses

PY 698. Premaster's Degree Graduate Research. 1-12 Hour.

PY 699. Master's Level Thesis Research. 1-12 Hour.

Prerequisites: GAC M

PY 701. Professional Issues and Ethics in Psychology. 1 Hour.

APA ethical code, manual for service providers in psychology, state and national mental health codes and trends for service providers; ethical practices in research with human subjects. APA organizational structure.

PY 702. History and Systems of Psychology. 3 Hours.

Major schools of psychology; influential figures in psychology.

PY 704. Social Psychology. 3 Hours.

Interpersonal relationships and effects of social environment on social perception and human behavior.

PY 705. Learning Processes. 3 Hours.

Phenomena and mechanisms of learning; information processing, attention, and major issues of learning theory.

PY 706. Sensory and Perceptual Processes. 3 Hours.

Sensory physiology; diagnostic techniques for pathophysiology of sensory systems; human psychophysics and principles of perception.

PY 707. Cognition. 3 Hours.

Attention, memory, learning, and information processing; theoretical issues and evaluation of relevant research.

PY 708. Developmental Psychology. 3 Hours.

Human development from prenatal period to old age. Genetic and environmental determinants of behavior; linguistic, cognitive, intellectual, personality, social, and emotional development.

PY 710. Seminar in Contemporary Issues in Developmental Psychology. 1 Hour.

Weekly forum to discuss issues related to developmental research; ethical issues; professional issues.

PY 711. Seminar in Cognitive Development. 3 Hours.

Seminar in the development of and changes in memory, perception, learning, and thinking throughout the lifespan.

PY 712. Social Development Seminar. 3 Hours.

Theoretical models and empirical findings.

PY 713. Seminar in Language Development. 3 Hours.

Research and theory related to normal and deviant language development.

PY 716. Intro to Statistics. 3 Hours.

Probability, descriptive statistics, sampling distributions, null hypothesis testing, comparisons between means; tests on categorical data, bivariate and multiple regression.

PY 716L. Lab for Intro to Statistics. 1 Hour.

This laboratory for PY 716 will extend coverage of class topics into applied computer lab.

PY 717. Applied Statistical Methods. 3 Hours.

Analysis of variance and regression for between- and within-subjects research designs including one or more independent or predictor variables.

Prerequisites: PY 716 [Min Grade: C]

PY 717L. Lab for Appl. Stat. Methods. 1 Hour.

Laboratory for Applied Statistical Methods.

PY 718. Research Design. 3 Hours.

Traditional and nontraditional approaches; includes univariate and multifactor experimental designs, quasi-experimental designs.

PY 719. Multivariate Statistical Methods. 3 Hours.

Multiple regression, mediation and moderation, multivariate analysis of variance, logistic regression, principal components and factor analysis, and structural equation modeling.

Prerequisites: PY 717 [Min Grade: C]

PY 719L. Lab for Multivar. Stat. Methods. 1 Hour.

Laboratory for Multivariate Statistical Methods.

PY 720. Human Neuropsychology. 3 Hours.

Structure and function of human brain; human behavior; cognitive functions and personality functions; brain-behavior relationships following neurological impairment.

Prerequisites: PY 753 [Min Grade: C]

PY 721. Neuropsychological Assessment. 3 Hours.

Evaluation of various types and locations of brain damage and human mental impairment; assessment applications.

Prerequisites: PY 720 [Min Grade: C]

PY 723. Seminar in Abnormal Child Development. 3 Hours.

PY 726. Seminar in Advanced Developmental Psychology. 3 Hours.

Advanced issues in developmental research and theory.

PY 727. Longitudinal Data Analysis Laboratory. 3 Hours.

Hands-on advanced statistics class focusing on analyses of longitudinal data. Topics include multilevel (hierarchical) models, latent growth curve models, latent transition analysis, and survival analysis.

PY 729. Seminar in Adolescent Development. 3 Hours.

This course provides in-depth coverage of current theoretical models and empirical research on adolescent development. Areas covered include biological, psychological, and social aspects of development, psychopathology and health-risk behaviors, intervention research, and public policy.

Prerequisites: PY 719 [Min Grade: C]

PY 731. Health Psychology. 3 Hours.

Prevention, enhancement, and intervention; environmental factors, marketplace factors, and interpersonal factors. Includes basic concepts, methods and instruments in health psychology assessment.

PY 735. Psychology of Addiction. 3 Hours.

Causative and developmental factors and treatment approaches for all types of addictions (nicotine, alcohol, drugs, etc.).

PY 737. Psychology of Eating Disorders & Obesity. 3 Hours.

Knowledge of the history, epidemiology, genetic, environmental, and behavioral correlates and prevention and treatment strategies of eating disorders and obesity; general knowledge regarding mechanisms of normal feeding and weight control and research methods used to understand other psychiatric disorders. This is as an advanced undergraduate and graduate elective in Psychology.

PY 739. Contemporary Issues in Clinical Medical Psychology. 1 Hour.

Topics vary. Enrollment in the doctoral program in Clinical/Medical Psychology required.

PY 740. Adult Personality and Psychopathology. 3 Hours.

Fundamental theories, concepts, issues, and methodologies related to personality and psychopathology in adults. Focus is on major dimensions of personality and categories of mental disorder from biological and psychosocial perspectives.

PY 741. Child and Adolescent Psychopathology. 3 Hours.

Covers diagnoses first evident in childhood and adolescence, considering their potential etiology, issues in differential diagnosis, comorbidity, and appropriate intervention approaches.

Prerequisites: PY 708 [Min Grade: C]

PY 742. Sport Psychology. 3 Hours.

Psychological factors in athletic performance. Psychological characteristics of successful athletes; anxiety arousal, motivation, attention, concentration, attribution, cognition, and imagery.

PY 743. Methods in Neuroimaging. 3 Hours.

Cognitive neuroscience research has provided valuable insights into the workings of the human brain. The techniques used in cognitive neuroscience span from postmortem brain studies to neuroimaging studies. The ability to perform neuroimaging studies on awake human individuals engaged in cognitive, social, sensory, and motor tasks has produced a conceptual revolution in the study of human cognition. This course will comprehensively examine the methods and techniques in neuroimaging with the primary goal of building fundamental knowledge in the concepts and techniques of neuroimaging. By the end of the course, students will have gained basic knowledge in the field and will be able to read and critically assess scientific journal articles that make use of a variety of neuroimaging methods. The secondary and implicit goal of this course is to create and nurture, in students, a genuine interest in neuroscience and neuroimaging. The course will explore techniques, such as single and multi cell recordings, deep brain stimulation, electroencephalography, functional magnetic resonance imaging, and diffusion tensor imaging. This course will be an apt venue for graduate students interested in neuroscience research to build a platform for continuing studies.

PY 745. Neurobiology of Learning. 3 Hours.

Introduction of data, phenomena, and theory related to associative learning of behaviors. Discussion of issues related to the neurobiology of nonassociative learning, stimulus encoding, and memory.

PY 749. Social Psychophysiology. 3 Hours.

Current research on the effects of the social world on hormonal responses (cortisol, testosterone etc.). Several research articles will be discussed every week in a seminar format.

PY 751. Human Psychopharmacology. 3 Hours.

Neurophysiological underpinnings and clinical use of drugs for the treatment of mental disorders and pain.

PY 753. Overview of Behavioral Neuroscience. 4 Hours.

Neural systems which control behavior will be studied, incorporating knowledge gained from neurobiological and psychological research. Topics will include synaptic communication, sensation and perception, movement, genetic influences on behavior, motivation, emotions, psychopathology, brain plasticity, and an extended module on learning.

PY 755. Human Psychophysiology. 3 Hours.

Basic and applied research topics.

PY 756. Research Seminar in Behavioral Neuroscience. 1 Hour.

Discussion of current literature and presentation of ongoing research by students in the program.

PY 760. Interviewing and Behavioral Observation. 2 Hours.

Theory and practice of interviewing and behavioral assessment with adult and child populations.

PY 761. Behavioral Assessment. 2 Hours.

Psychometric and observational procedures, relying largely on behavioral theory, to observe, analyze, and assess human clinical behaviors; development of intervention activities.

PY 764. Cognitive Assessment: Child and Adult. 3 Hours.

Cognitive assessment of children focusing on Wechsler scales, Stanford-Binet and additional cognitive, academic, memory, and learning tests.

PY 765. Psychological Assessment: Personality I. 2 Hours.

Objective personality assessment, primarily focusing on Minnesota Multiphasic Personality Inventory.

PY 769. Cognitive Behavior Therapy. 3 Hours.

Review of cognitive behavioral theory and methods with emphasis on empirically validated individual and group, including brief, interventions.

PY 770. Survey of Psychotherapeutic Methods. 3 Hours.

Procedures for changing maladaptive behavior. Research and methodological issues, factors common to most therapy, and major therapeutic techniques.

PY 772. Behavior Therapy. 3 Hours.

Cognitive and more traditional behavioral approaches to intervention in mental health and medical environment.

PY 774. Family Therapy. 3 Hours.

Traditional systems theory, intervention strategies, and family dynamics; case examples and group participation.

PY 776. Child and Adolescent Psychotherapy. 2 Hours.

Application of child psychopathology knowledge and intervention with child and adolescent population; theoretical and applied issues of verbal and nonverbal psychotherapy.

Prerequisites: PY 708 [Min Grade: C]

PY 777. Psychotherapy Practice Shadowing. 1 Hour.

Introduction to psychotherapy practice by sitting in on therapy (consented) with a practicing psychologist.

PY 778. Psychotherapy Practice Initial. 2 Hours.

Initial supervised practice in psychotherapy; includes individual and group supervision and observation by professor(s).

PY 780. Rehabilitation Psychology. 3 Hours.

Rehabilitation of chronic physical disorders; neurological disorders such as cerebrovascular disease, head trauma, and spinal cord injury.

PY 781. Forensic Psychology. 2 Hours.

Interface between psychology and law; civil and criminal procedure; expert witness; insanity, competency, commitment, and malpractice. Experience in criminal justice settings.

PY 783. Developmental Disabilities. 3 Hours.

Mental retardation, learning disabilities, and other developmental disorders. Research on nature of disabilities and major intervention techniques.

Prerequisites: PY 708 [Min Grade: C]

PY 785. Psychology of Aging. 3 Hours.

The relationship between aging and health, cognitive function, intelligence, personality, relationships, and psychopathology. Other topics covered in this course include assessment and treatment of psychological disorders in older adults, end-of-life issues, caregiving and dementia.

PY 786. Aging Seminar. 1 Hour.

Contemporary topics in aging including basic science, clinical, and psychosocial issues.

PY 787. The Dynamics of Pain. 3 Hours.

Comprehensive study of the physiology, pharmacology, and anatomy of acute and chronic pain. Emphasis on how medical treatments relieve pain. Topics include: stress-induced analgesia, transcutaneous electrical stimulation, acupuncture, inflammation, and psychological approaches to the treatment of pain.

PY 788. Pediatric Psychology. 3 Hours.

Behavioral influences on health and illness; impact of health problems and illness on behavior and development of children and adolescents; family issues related to these interactions.

PY 789. Social/Ethnic Issues in Therapy. 3 Hours.

Psychotherapeutic issues pertinent to the counseling of the culturally diverse; examination of the effects of various cultural histories, values, morals and intrafamilial relationships. Groups emphasized: Hispanic, African-American, Asian and American Indian populations. Issues concerning therapist from a different cultural background than the treatment population.

PY 790. Internship in Clinical Psychology. 9 Hours.

Completion of an APA-accredited internship in clinical psychology.

PY 791. Cross-cultural Perspectives on Mental Illness and Health.. 3 Hours.

Human Factors Psychology is the study of the interaction between humans and our environment. Through case studies and current research, we will learn how to design products/environments, computer interfaces, and machines that are adapted to our cognitive, physical, and sensory capabilities. Topics will include the history of human factors, physical human capacities, human-machine relations, displays and controls, and human controller reliability.

PY 793. Cognitive Neuroscience. 3 Hours.

How cognitive processing originates from brains. Focus on synthetic approaches to sensory-input guided behavior implemented in a biologically realistic manner; neurobiological wetware underlying cognition; study and construction of synthetic approaches that emulate biological behavior and psychological processes.

PY 796. Practicum in the Teaching of Psychology. 1-9 Hour.**PY 797. Clinical Practicum in Medical Psychology. 1-9 Hour.****PY 798. Predoctoral Degree Graduate Research. 1-9 Hour.****PY 799. Doctoral Dissertation Research. 1-9 Hour.**

Prerequisites: GAC D

Postdoctoral (Dentistry) Courses**PG 501. Selected Topics in Anatomy of the Head and Neck. 3 Hours.****PG 502. Pharmacology and Therapeutics for Dentistry. 3 Hours.****PG 503. Alloy Systems in Dentistry. 3 Hours.****PG 504. Evidence-Based Orthodontics. 3 Hours.****PG 505. Board Case Review In Peds Dent. 3 Hours.****PG 506. TMD & Orofacial Pain. 3 Hours.****PG 508. Adv Topics in Pediatric Dent. 3 Hours.****PG 509. Fundamentals of Ped Dent. 3 Hours.****PG 511. Physcial Diagnosis. 3 Hours.****PG 512. Dental Clinical Pathology. 3 Hours.****PG 514. Dentoalveolar Surgery. 3 Hours.****PG 517. Oral & Max Microbio Seminar. 4 Hours.****PG 518. Case Presentation Ped Dent. 3 Hours.****PG 520. Clinical Pediatric Dentistry I. 3 Hours.****PG 521. Clinical Periodontics. 2 Hours.****PG 522. Periodontal Literature Review. 3 Hours.****PG 523. OMS Anatomy. 3 Hours.****PG 524. Dental Radiology. 3 Hours.****PG 525. Design and Analysis of Clinical Dental Research. 3 Hours.****PG 527. Surgical Implants in Dentistry. 3 Hours.****PG 528. Dental Management of the Medically Compromised Patient. 2 Hours.****PG 530. Clinical Peds Dentistry II. 3 Hours.****PG 534. Craniofacial Genetics. 3 Hours.****PG 537. Growth and Development - Genetics. 3 Hours.****PG 540. Clinical Peds III. 3 Hours.****PG 546. Biochemistry of Connective Tissue and Bone. 3 Hours.****PG 550. OMS Pathology. 3 Hours.****PG 552. Postgraduate Oral Pathology. 3 Hours.****PG 556. Hospital Dentistry. 2 Hours.****PG 560. Saliva: Composition and Function. 3 Hours.****PG 563. Saliva as a Diagnostic Fluid. 3 Hours.****PG 564. Grand Round in Ped Dent. 3 Hours.****PG 565. Maxillofacial Pros. Seminar. 3 Hours.****PG 566. Clinical Max Prosthetics. 6 Hours.****PG 568. Physiology & Concepts of Occlu. 3 Hours.****PG 569. Oral Microbiology & Immunology. 3 Hours.****PG 571. Special Topics in Oral Surgery. 6 Hours.****PG 577. Periodontal Case Conference. 3 Hours.****PG 578. Periodontal Mock Board Topics. 3 Hours.****PG 583. Graduate Cariology. 3 Hours.****PG 584. Post-Graduate Maxillofacial Trauma. 3 Hours.**

PG 585. Advanced Endodontics Seminar I. 3 Hours.
 PG 586. Advanced Endo Seminar II. 3 Hours.
 PG 587. Oral Immunology & Vaccine Dev. 3 Hours.
 PG 589. Conscious Sedation. 3 Hours.
 PG 590. Ped Dent Literature Review. 2 Hours.
 PG 591. Special Topics in Maxil Pros. 1 Hour.
 PG 592. Adv Maxillofac Pros Lab Tech. 3 Hours.
 PG 594. Special Topics In Ped Dent. 3 Hours.
 PG 600. Post-Grad Craniofac Deformitie. 3 Hours.
 PG 601. Dentoalveolar Surgery. 3 Hours.
 PG 601D. Dentalveolar Surgery. 3 Hours.
 PG 602. Esthetic Surgery. 3 Hours.
 PG 602A. Esthetic Surgery Continued. 3 Hours.
 PG 603. Orthognathic Surgery. 3 Hours.
 PG 603A. Orthognathic Surgery Continued. 3 Hours.
 PG 604. Micro Surgery. 3 Hours.
 PG 605. OMS Anatomy Seminar. 3 Hours.
 PG 606. Surgical Implantology. 3 Hours.
 PG 606A. Surgical Implantology Continue. 3 Hours.
 PG 607. TMJ Disorders. 3 Hours.
 PG 608. Advanced Craniofacial Growth. 3 Hours.
 PG 609. Multidisciplinary Seminars II. 3 Hours.
 PG 701. Cariology Journal Club. 1 Hour.
 PG 703. Studies in Clin Gen Dentistry. 4 Hours.
 PG 704. Summer Modules (Introductory). 1 Hour.
 PG 705. Implant Dentistry Case Conf. 3 Hours.
 PG 706. Implant Evidenced-Based Dentis. 3 Hours.
 PG 707. Fundamentals I. 5 Hours.
 PG 708. Fundamentals II. 5 Hours.
 PG 709. Craniofacial Syndrome Series. 3 Hours.
 PG 710. Advanced Oral Pathology. 3 Hours.
 PG 721. Advanced Clinical Pros I. 6 Hours.
 PG 722. Advanced Clinical Pros II. 6 Hours.
 PG 723. Advanced Clinical Pros III. 6 Hours.
 PG 731. Intro to Adv Prosthodontics. 3 Hours.
 PG 732. Principles of Fix Prosth. 3 Hours.
 PG 733. Principles of Comp Oral Rehab. 3 Hours.
 PG 734. Physio of Occlu & Articulation. 3 Hours.
 PG 735. Prin of Implant Dentistry. 3 Hours.
 PG 736. Implant Surgical Placement. 3 Hours.
 PG 737. Adv Esthetic Dentistry. 3 Hours.
 PG 738. Principles of RPD's. 3 Hours.
 PG 739. Principles of Comp Dentures. 3 Hours.
 PG 740. Adv Dent Materials Prosthodont. 3 Hours.
 PG 750. Genetics. 2 Hours.

PG 751. Evidence-Based Dentistry. 3 Hours.
 PG 752. PBL: Advanced Pros Topics. 3 Hours.
 PG 753. Multidisciplinary Seminars I. 3 Hours.
 PG 754. Treatment Planning Conf. 3 Hours.
 PG 755. Prosthodontics Case Conf. 3 Hours.
 PG 756. Prosthodontic Lit Review. 3 Hours.
 PG 757. Board Exam Topics. 3 Hours.
 PG 758. Clin Applied Den Materials. 3 Hours.
 PG 759. Clin Applied Dent Mat-Lecture. 3 Hours.
 PG 760. Journal Club for Biomaterials. 1 Hour.
 PG 761. Implant Dentistry Book Review. 1 Hour.
 PG 762. Pedo Oral Conscious Sedation. 3 Hours.
 PG 763. Oral & Skeletal Bio Journal. 2 Hours.
 PG 764. Special Topics in Orthodontics. 3 Hours.
 PG 770. Adv Restorative Dent Seminar I. 3 Hours.
 PG 771. Adv Restorative Den Seminar II. 3 Hours.
 PG 774. IDP Summer Clinic. 1 Hour.
 PG 774R. Summer Clinic Remediation. 1 Hour.
 PG 775. Ped Pres Special Care Dent. 2 Hours.
 PG 776. Adv Topics in Orthodontics. 3 Hours.
 PG 777. Spanish for Ped Dentistry. 1 Hour.
 PG 778. Intro to Surgical Implants. 3 Hours.
 PG 779. Adv Therapeutics In Perio. 3 Hours.
 PG 780. Physical Assessment Peds I. 3 Hours.
 PG 781. Relevent Issues in Dent Practi. 3 Hours.
 PG 782. Board Prep in Ped Dentistry. 3 Hours.
 PG 783. Adv Dental Materials I. 3 Hours.
 PG 784. Adv Dental Materials II. 3 Hours.
 PG 785. Adv Dental Materials III. 3 Hours.
 PG 787. Adv Clinical Dentistry. 3 Hours.
 PG 788. Special Track Ortho Program. 10 Hours.
 PG 789. Biomaterials Book Review. 1 Hour.
 PG 790. Orthodontic Clinic. 6 Hours.
 PG 791. Seminar Topics in Orthodontics. 6 Hours.
 PG 792. Signing in Dentistry. 1 Hour.
 PG 793. Anesthesia/Gen Surg Seminar. 1 Hour.
 PG 794. Board Prep in Ped Dentistry II. 3 Hours.
 PG 795. Physical Assessment Peds II. 3 Hours.
 PG 796. Genetics. 2 Hours.
 PG 797. Adv Restorative Technique. 3 Hours.
 PG 798. Endodontic Clinic. 6 Hours.
 PG 799. Seminar Topics in Endodontics. 6 Hours.

QM-Quantitative Methods Courses

QM 525. Applied Regression Analysis. 3 Hours.

RST-Respiratory Therapy Courses

Registrar's Use Only Courses

Rehabilitation Sciences Courses

RHB 780. Perspectives in Rehab Science. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of neural control, biomechanics, motor learning, and motor development and how purposeful and functional body movements are accomplished under a variety of health conditions and disease processes.

RHB 781. Topics in Rehabilitation Science Research. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of cardiac and pulmonary physiology, exercise physiology, and health behaviors and how important activities are accomplished under a variety of health conditions and disease processes.

RHB 782. Topics in Rehabilitation Science Research: Working and Playing. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of occupation science and how work and play activities are accomplished under a variety of health conditions and disease processes.

RHB 783. Research Design in Rehab Sci. 3 Hours.

A detailed overview of research design and methodologies used in rehabilitation science, including quantitative and qualitative methods.

RHB 784. Res Design/Measure Rehab Sc II. 3 Hours.

A detailed overview of research design and methodologies used in rehabilitation science, including quantitative and qualitative methods. A continuation of Research Design and Measurement in Rehabilitation Science I.

RHB 789. Rehab Science Seminar. 2 Hours.

Varied discussion of rehabilitation science topics to help students explore research questions in preparation for their dissertation.

RHB 790. Rehabilitation Science Research Project. 1 Hour.

Research experience where the student rotates through a variety of clinical research areas related to Rehabilitation Science.

RHB 791. Rehabilitation Sciences Clinical Project. 1 Hour.

Working with clinicians in a variety of clinical settings, the student develops a project to help solve a Rehabilitation Science-related problem.

RHB 798. Non Dissertation Research. 1-9 Hour.

Development of research proposal.

RHB 799. Dissertation Research. 1-9 Hour.

Dissertation Research.

SA-Surgeons Assistant Courses

SOC-Sociology Courses

SOC 601. Data Management and Analysis. 3 Hours.

An introduction to statistical theory and univariate and bivariate statistics.

SOC 698. MR Level Non-Thesis Research. 1-12 Hour.

Integration of theory and research methods: synthesis of data into well-written report derived from research activities.

SOC 699. Thesis Research. 1-12 Hour.

Prerequisites: GAC M

SOC 702. Proseminar: The Profession of Sociology. 1 Hour.

The culture and organization of sociology; norms and values of the graduate student culture and the profession; the sociological imagination; sociological careers; the practice of sociology; thesis development. Designed to orient the student to the perspective and practice of sociology. Required of all beginning graduate students.

SOC 704. Categorical Data Analysis. 3 Hours.

Logistic regression and other models for categorical outcomes.

SOC 705. Advanced Research Methods. 3 Hours.

Methodology of social research.

Prerequisites: SOC 601 [Min Grade: C]

SOC 706. Longitudinal Analysis. 3 Hours.

Advanced longitudinal analysis, including repeated cross-sections, time series regression, event history, and growth curve modeling.

SOC 707. Sociological Theory. 3 Hours.

Basic theoretical perspectives; functionalism, conflict theory, structuralist theory, synthesizing macro and micro.

Prerequisites: SOC 407 [Min Grade: D]

SOC 711. Qualitative Methods. 3 Hours.

Field research design, observational research; in-depth interviewing strategies, gaining access to research sites.

SOC 712. Theory Construction. 3 Hours.

Logic of constructing theories; issues in the philosophy of science.

SOC 713. Intro to Applied Sociology Research Methods. 3 Hours.

Overview of methodologies used in applied social science research; major emphasis includes components of the research process, problem conceptualization, research design, measurement, sampling, questionnaire development, modes of data collection, and ethical issues in both quantitative and qualitative research.

SOC 714. Survey Research Methods. 3 Hours.

Survey design, sampling, instrumentation, data collection and analysis, and report writing.

SOC 715. Program Evaluation. 3 Hours.

Topics associated with the use of social sciences to evaluate programs, including appropriate measures of quality; selection of evaluation methodology; accuracy, reliability, and validity of measures.

SOC 716. Social Stratification. 3 Hours.

Theories of inequality; race and ethnic inequality, gender inequality, and international inequality.

SOC 720. Classical Theory. 3 Hours.

The major works of classical sociological theorists, including Durkheim, Marx, Weber, and Simmel.

SOC 722. Contemporary Sociological Theory. 3 Hours.

Review of late 20th century and early 21st century sociological theories and issues.

SOC 723. Applied Sociological Theory. 3 Hours.

21st century sociological theory at the micro, meso, and macro levels.

SOC 724. Multidisciplinary Research Colloquium. 4 Hours.

Multidisciplinary research in aging.

SOC 726. Applied Sociology. 3 Hours.

An overview of the field of applied sociology with special attention to current trends and issues in the application of social science in both for-profit- and not-for-profit sectors.

SOC 727. Applied Social Psychology. 3 Hours.

Examination of how social psychological theory and evidence are applied to understanding and addressing social and practical problem on such topics as health, education, criminal justice, community, environment, and diversity.

SOC 728. Teaching Sociology. 3 Hours.

Using current knowledge about cognition and learning styles to improve classroom techniques for teaching sociology.

SOC 729. Consumer Culture. 3 Hours.

An exploration of theoretical understandings of consumer culture from Georg Simmel to Jean Baudrillard and their application to consumer research.

SOC 731. Health Disparities among Children and Adolescents. 3 Hours.

Seminar focusing on socioeconomic and race/ethnic differentials in the health and well-being of infants, children, and adolescents, as as the policies and programs aimed at improving children's health and reducing disparities. This class will draw on the scholarly literature in the interrelated fields of demography, public health, health policy, and sociology.

SOC 734. Global Health. 3 Hours.

Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

SOC 735. Special Topics in Global Health. 3 Hours.

Analysis of selected topics in the field of international health and medical sociology.

SOC 737. Practicum in Innovation, Creativity, and Applied Sociology. 3 Hours.

Directed activities that allow students to develop innovative ways to apply social sciences to challenges faced by society, business, and government.

SOC 740. Deviant Behavior. 3 Hours.

Contemporary sociopsychological theories of deviant behavior; recent empirical findings.

SOC 745. Sociological Practice. 3 Hours.

Advancing sociologically-informed research and practice, to further public discussion of sociological issues, and to promote the use of sociology to inform public policy.

SOC 750. Pract Inno, Creat & Appl Soc. 3 Hours.

Directed activities that allow students to develop innovative ways to apply social sciences to challenges faced by society, business, and government.

SOC 755. Race and Ethnic Relations. 3 Hours.

Income inequality, school and residential segregation, intermarriage, and interracial crimes.

SOC 756. Gender and Health. 3 Hours.

Theories of inequality, applicability to gender stratification; macro and micro research.

SOC 759. Social Gerontology. 3 Hours.

Structural and behavioral implications of older adulthood. How early life experiences affect later life outcomes.

SOC 760. Sociology of Death and Dying. 3 Hours.

Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying.

SOC 770. Techniques of Population Analysis. 3 Hours.

Composition of population; constructing life tables; population estimation and projection; migration.

SOC 772. Medical Demography. 3 Hours.

Quantitative assessment of health status of populations in clinical, epidemiological, and sociological studies; interrelationships of health with population structure and dynamics. Modeling preventive health strategies.

SOC 773. History of Theory. 3 Hours.**SOC 775. Place and Health. 3 Hours.**

Population distributions and spatial patterns in cities, effects on behavior and social structure.

SOC 776. Capstone Project. 6 Hours.

A faculty-directed research project, undertaken at the conclusion of the program, that provides an opportunity to synthesize all previous course materials.

SOC 777. Demography of Health and Aging. 3 Hours.

Focus on demographic processes, such as mortality, morbidity, migration, and fertility; how each influences number and proportion of elderly; how such processes shape age/sex structure; other demographic characteristics of older people.

SOC 778. Demography. 3 Hours.

Effect of population processes such as birth, death, migration, and marriage on growth, decline, composition, and distribution of population.

SOC 780. Advanced Medical Sociology. 3 Hours.

Theory and research in medical sociology; systematic overview of relevant literature.

SOC 781. Sociology of Health and Illness. 3 Hours.

Subjective experience of illness; predictions of health behavior; social networks and health.

SOC 783. Health Care Delivery Systems. 3 Hours.

Sociological methods and concepts in healthcare institutions; health care policy.

SOC 785. Family and Health. 3 Hours.

How family structure and family process affect health outcomes.

SOC 786. Health Disparities. 3 Hours.

Prevalence, causes, and consequences of health and mental health problems for special populations, such as homeless, poor, African-Americans, and others; service delivery systems.

SOC 787. Sociology of Mental Health. 3 Hours.

Detailed examination of the mental health of various subpopulations including racial minorities, women, elderly, homeless, children.

SOC 788. Social Medicine. 3 Hours.

Socioenvironmental factors in etiology of disease; social movements and health policy; medical ethics and broad ethical issues; place of social science in medical care.

SOC 789. Patient Care Relations/Ethics. 3 Hours.

Issues shaping content and quality of patient care; special significance of practitioner-patient-family triad; broad sociocultural and political economic forces affecting medical practice, and creating moral dilemmas.

SOC 790. Seminar in Gerontological Substantive Areas. 3 Hours.

Individually designed research agendas for students wishing to conduct semi-independent research or guided reading in social gerontology.

SOC 791. Seminar in Substantive Sociological Areas. 1-3 Hour.**SOC 792. Seminar in Substantive Sociological Areas. 1-3 Hour.**

SOC 793. Seminar in Substantive Sociological Areas. 1-3 Hour.

SOC 796. Research Seminar and Aging. 3 Hours.

SOC 798. Non-Dissertation Research. 1-12 Hour.

SOC 799. Dissertation Research. 1-12 Hour.

Prerequisites: GAC D

SPA-Spanish Courses

SPA 501. Discourse of Imperial Spain, 1492-1898. 3 Hours.

Civilization of Imperial Spain from the end of the Reconquest to the late-nineteenth century. Includes art, history, music, oral traditions and literature of the Spanish people. Conducted in Spanish.

SPA 502. Discourse of Colonial Latin America, 1492-1920. 3 Hours.

Civilization of Colonial Latin America from the advent of European dominance to the decades following the Spanish- American War and Mexican Revolution. Focus on the blending of Spanish, Amerindian and African cultural forms and their diverse literary expressions.

SPA 503. Discourse of Contemporary Spain, 1898-Present. 3 Hours.

Cultural and literary trends of Spain from the transformation of Spanish Society in the late-nineteenth century to the post-France era. Focus on impact of the Spanish Civil War.

SPA 505. US Latino Writers. 3 Hours.

Literary trends of Spanish-speaking cultures within the borders of the United States. Focuses on discourse of exile, migration, bilingualism, and hybridity.

SPA 507. Indigenous and Indigenist Latin America. 3 Hours.

Cultural and literary forms of Amerindian, Hispanic or mixed decent writers of Latin America. Focus on the concepts of hybridity, syncretism and mestizaje.

SPA 509. Spanish-Speaking Nobel Laureates. 3 Hours.

Literary masterpieces of the Spanish-speaking world.

SPA 511. Cervantine Discourse. 3 Hours.

Civilization of Golden Age Spain as reflected in Miguel de Cervantes's El ingenioso hidalgo don Quixote de la Mancha. Development of the modern novel and importance of Don Quixote as national hero and recurring figure in international art, music, film and literature.

SPA 512. Discourse of Contemporary Latin America, 1920-Present. 3 Hours.

Cultural and literary trends of Latin America from la nueva narrativa through the Boom and post-Boom periods. Focus on Mexico, Northern Latin America, and the Southern Cone.

SPA 514. Afro-Hispanic Discourse. 3 Hours.

Cultural and literary forms of African-descended writers in the Spanish-speaking world. Focus on the African presence in Medieval and Golden Age Spain, contemporary Spain, Equatorial Guinea, Latin America and/or the Caribbean.

SPA 516. Special Topics in Spanish. 3 Hours.

Seminar on individual authors, specific genres, literary movements, literary discourse/theory, or transatlantic studies. May be repeated for credit.

SPA 520. Introduction to Hispanic Linguistics. 3 Hours.

Analyze, clarify and expand upon critical aspects of the Spanish language (grammar, vocabulary and phonetics) and related cultural aspects in relation to the second language acquisition processes.

SPA 530. Spanish Sociolinguistics. 3 Hours.

This advanced Spanish linguistics course provides a general overview of sociolinguistics and the pragmatics of oral communication in Spanish. This course studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape.

SPA 540. History of Spanish Language. 3 Hours.

This advanced Spanish linguistics course provides a general overview of the evolution of Spanish language, while relating it to relevant historical events. It pays special attention to diachronic change in order to understand the phenomenon of language variation in a multicultural society.

SPA 550. Spanish Second Language Acquisition. 3 Hours.

This course describes the cognitive, developmental and linguistic processes involved in the acquisition of Spanish as a second language while exploring the basic research techniques used in the field.

SPA 590. Study Abroad. 1-6 Hour.

Fifth-year level of approved program in a Spanish speaking country.

SPA 599. Independent Studies. 3 Hours.

Individual studies in Spanish.

STH-Science and Tech Honors Courses

SW-Social Work Courses

THR-Theatre Courses

THR 520. Teaching Theatre in the Secondary School. 3 Hours.

Course provides the student with a complete understanding and utilization of the knowledge and skills needed to teach theatre at the secondary school level.

THR 562. Special Workshop. 1-3 Hour.

THR 590. Production Concepts Seminar. 3 Hours.

Creation and detailed proposal for implementation of production concepts for selected playscripts based on analysis of script and target audience.

THR 599. Individual Studies. 1-3 Hour.

TOX-Toxicology Courses

TOX 720. Lab Rotation in Toxicology. 1-12 Hour.

TOX 795. Advanced Toxicology Seminar. 1 Hour.

To facilitate the critical review of recent refereed publications in the field of toxicology. This will expose students to advanced knowledge and diversified subjects.

TOX 798. Non-Dissertation Research. 1-12 Hour.

UA-Urban Affairs Courses

UA 501. Seminar in American Government. 3 Hours.

Multiple theoretical approaches employed in study of American political culture, behavior, institutions, and policy making; their usefulness in understanding domestic politics.

UA 513. Urban Economics. 3 Hours.

Economic issues and structure of metropolitan areas. Economic growth and decay of urban regions. Specific topics: housing, employment, political economy, public policy.

Prerequisites: EC 210 [Min Grade: D] and EC 211 [Min Grade: D]

UA 520. Political Economy and Race in Birmingham. 3 Hours.

This course provides a critical analysis of race in the political economy of Birmingham from the postbellum period to the era of civil rights.

UA 521. Politics Planning and Urban Design. 3 Hours.

Relationship among politics, planning, and urban design.

UA 550. Contemporary Urban Issues. 3 Hours.

Topics of current importance and interest in the contemporary urban arena.

UA 572. Homeless: Causes and Consequences. 3 Hours.

Review of current problems of homelessness in U.S. issues of history, health, mental health, poverty, public attitudes, and government policy.

UA 573. Urban Environmental Issues. 3 Hours.

Broad examination of environmental issues; focus on Birmingham area.

UA 590. Directed Readings. 1-3 Hour.

Selected reading under supervision of faculty members.

UA 591. Directed Readings. 1-3 Hour.

Selected reading under supervision of faculty member.

UA 592. Public Affairs Internship. 3 Hours.

Individually arranged assignments monitored and evaluated by member of department.

UA 593. Field Placement. 3 Hours.

Individually arranged assignments, monitored and evaluated by member of department.

UA 594. Seminar in Urban Studies: Special Topics. 3 Hours.

Group investigation of topics of current interest in urban studies. Topics selected for analysis listed in class schedule each term.

UA 595. Seminar in Urban Studies: Special Topics. 3 Hours.

Group investigation of topics of current interest in urban studies. Topics selected for analysis listed in class schedule each term.

UA 596. Urban Research. 3 Hours.

Directed research for students with adequate background in methods and statistics; classroom introduction to research methodology and directed group research for those without significant research statistics background.

UA 597. Urban Research. 3 Hours.

Directed research for students with adequate background in methods and statistics; classroom introduction to research methodology and directed group research for those without significant research statistics background.

UNIV-University Courses**Unknown UAB Equivalency Courses****VIS-Vision Science Courses****VIS 550. Electronics for Biologists. 2 Hours.****VIS 670. Intermediate Orientation and Mobility Skills. 3 Hours.**

Development of teaching skills in orientation and mobility in semi-independent settings with multihandicapped and blind students.

VIS 671. Intermediate Orientation and Mobility Seminar. 3 Hours.

Recent research practices and problem areas in special education. Focus on intermediate orientation and mobility for multihandicapped and blind students.

VIS 672. Advanced Orientation and Mobility Skills. 3 Hours.

Advanced orientation and mobility teaching techniques for travel in independent settings for multihandicapped and blind students.

VIS 673. Advanced Orientation and Mobility Seminar. 3 Hours.

Recent research practices and problem areas in special education. Focus on advanced orientation and mobility for people with multiple handicaps and blindness.

VIS 674. Orientation and Mobility Internship. 3-6 Hours.

Demonstrate skills in applying principles of special methods of teaching, designing instruction, conducting skills assessments, and in preparing written reports, and consulting and collaborating with professionals and parents to assure orientation and mobility programming for students with visual impairments.

VIS 698. Master s Level Non-Thesis Research. 1-15 Hour.

Non Thesis Reseach in Vision Science.

VIS 699. Master's Level Thesis Research. 1-15 Hour.

Prerequisites: GAC A

VIS 700. Vision Related Literature Review. 1 Hour.

Vision Related Literature Review - preparing for giving public presentations.

VIS 701. Visual Sensitivity and Resolution. 3 Hours.**VIS 702. Color Vision. 3 Hours.****VIS 703. Visual Neuromuscular Mechanisms. 3 Hours.****VIS 704. Binocular Vision. 3 Hours.****VIS 705. Microscopic Anatomy of the Retina and Central Visu. 3 Hours.****VIS 706. Visual Infromation Processing. 3 Hours.****VIS 707. Visual Optics. 3 Hours.****VIS 708. Visual Perception. 3 Hours.****VIS 709. Ocular Physiology. 3 Hours.**

Physiology of the Eye.

VIS 710. Ocular Biochemistry and Molecular Biology. 3 Hours.

Ocular Biochemistry.

VIS 717. Principles of Scientific Integrity. 1 Hour.**VIS 720. Instrumentation for Vision Research. 2 Hours.****VIS 721. Optics and Optical Design. 2 Hours.****VIS 722. Specification of Visual Stimuli. 2 Hours.****VIS 723. Psychophysical Methods. 2 Hours.****VIS 724. Applied Statistics in Basic and Clinical Sciences. 3 Hours.**

Mathematical Techniques in Vision Research.

VIS 725. Historical Techniques for Light Microscopy. 2 Hours.**VIS 726. Techniques in Corneal Physiology. 2 Hours.****VIS 727. Systems Neuroscience Journal Club. 1 Hour.**

Biochemical Techniques in Eye Research.

VIS 728. Computational Neuroscience Methods. 3 Hours.

An introduction to the basic principles and techniques needed to do research on systems of neurons for students who do not have an engineering background.

VIS 729. Introduction to Neurobiology/Marine Biology. 4 Hours.**VIS 730. Corneal Physiology. 2 Hours.****VIS 731. Growth and Development of the Visual System. 2 Hours.****VIS 732. Physiology of the Other Sensory Systems. 2 Hours.****VIS 734. Refractive Error. 2 Hours.**

VIS 736. Comparative and Evolutionary Aspects of Vision. 2 Hours.**VIS 737. Orientation for Vision Educators. 2 Hours.****VIS 738. Public Health and Vision. 2 Hours.****VIS 739. Molecular Biology. 2 Hours.****VIS 740. Biophysics of Photoreceptors. 2 Hours.****VIS 741. Special Topics in Vision Neurobiology. 1 Hour.****VIS 742. Special Topics in Corneal Research. 1 Hour.****VIS 743. Optics and Imaging. 3 Hours.**

Optical properties of the eye. Transparency, aberrations, modulation transfer functions of the eye. Use of coherent optics (lasers) in vision research. MRI in vision research.

VIS 744. Ocular Anatomy, Physiology and Biochemistry of Anterior Segment. 3 Hours.

Anatomy of the eye. Biochemistry and physiology of ocular tissues, including tears, cornea, aqueous humor, lens, vitreous and sclera.

VIS 745. Ocular Anatomy-Physiology and Biochemistry II. 3 Hours.

Continued examination of ocular anatomy, biochemistry and physiology.

VIS 748. Central Visual Mechanisms II. 3 Hours.

Analysis of the visual scene by cortical neurons, including temporal coding, motion detection, shape analysis, leading to visual perception.

VIS 750. Current Topics in Retina Research. 1 Hour.**VIS 751. Adv Retinal Morphology and Physiology. 3 Hours.**

Literature based discussions of the physiology and underlying circuitry of the vertebrate retina.

VIS 752. Vision Science Journal Club. 1 Hour.

Read original literature, extract key points, present summary and critique articles related to vision research.

VIS 753. MRI for Biologists. 3 Hours.

The theory and practice of Magnetic Resonance Imaging will be discussed. There will be lecture and discussion of theory and underlying spin physics and the relationship between spin pulse sequences, sources of contrast in images, post processing analysis, and software use. Students will have an opportunity to experiment with various pulse sequences on an ultra-high field MRI in the lab.

VIS 754. MRI for Biologists Lab. 1 Hour.

Students will have an opportunity to experiment with various pulse sequences on an ultra-high field MRI in the lab.

VIS 755. Electronic for Biologists. 3 Hours.

This course provides an overview of the fundamental concepts of electronics that are relevant to a biologist. The material is aimed at non-engineers who need a background in the circuit concepts needed for studying ion channels, electrophysiology, the basics of the proper use of amplifier and filter, and the use of computers to acquire and analyze data. There will be a mix of formal lectures and problem set with practical hands-on experience.

VIS 756. Visual Neuroscience. 4 Hours.

Vision begins with photons and ends in the brain. How does it all work? This course introduces the student to the anatomical and physiological underpinnings of visual perception, stepping from single photoreceptors in the retina on through the cortical neural circuits devoted to capturing every facet of seeing the world. Lectures are supplemented with hands-on sessions where students can test their own vision.

VIS 760. Sensory Impairment Lit Review. 1 Hour.

Sensory Impairment and Deafblind literature review and presentation.

VIS 761. Neuroblgy/Dev Human Vis Sy I. 3 Hours.

This course is a two part sequence that provides in-depth studies of anatomy and physiology of retina and other ocular structures. Basis for understanding of genetic abnormalities and disease processes.

VIS 762. Neuroblgy/Dev Human Vis Sy II. 3 Hours.

This is the second sequence providing in-depth studies of anatomy and physiology of the auditory systems. Basis for understanding of genetic abnormalities and disease processes. Provide comprehensive exploration of development of embryotic and prenatal visual and auditory systems.

VIS 763. Central Visual Processing. 4 Hours.

Analysis of the visual scene by cortical neurons, including temporal coding, motion detection, shape analysis, leading to visual perception. Structure and function of geniculostriate parallel pathways, subcortical projections and the oculomotor system.

VIS 764. Sensory Impairments. 3 Hours.

The course includes the development, anatomy, histology and physiology of deafblindness, relating structure to function. The focus is presentation of deafblind etiology and implications of visual/auditory disorders related to deafblindness.

VIS 765. Audirotiy Impairments. 3 Hours.

The course builds in the basic auditory structure and sequence from outer ear to the auditory cortex. The course includes the development, anatomy, histology and physiology of the auditory systems, relating structure to function. The focus is presentation of etiology and implications of auditory disorders. Psycho-acoustics will focus on the perceptual aspects of sound and acoustic representation in the auditory pathway. Audiological assessment and technological resources appropriate for persons with deafblindness.

VIS 766. Deafblind Analy Sensory Impair. 3 Hours.

The course involves additional audio metric and vestibular assessments, approaches and accommodations for deafblindness. implications of deafblindness on sensory integration for communication and learning and the impact of medical conditions and additional impairments. Also included is the relevance of brain development and neurological implications of deafblindness to teaching and learning.

VIS 767. Deafblind Communication Techno. 3 Hours.

The course provides an understanding language, sign language, Braille, development of stages of learners and the effects of timely intervention. Knowledge of genetic development and frequently occurring anomalies related to deafness, blindness and deafblindness are included in the research and class design. An understanding of the implications and interventions for multiple disabilities including deafblindness are presented as well as technology used for communication and appropriate interventions for technology. Instructional planning, strategies of intervention, and research to practice for communication based on language Level of a person's neurological functions and sensory integration are the competencies addressed in this course.

VIS 768. Deafblind Seminar. 1-3 Hour.

Focusing on various deafblind issues how to apply resolutions.

VIS 769. Supervision & Mentoring. 3 Hours.

This course is to prepare the future leader to utilize knowledge of human resources to accomplish agency goals. This includes supervising and evaluating employees, mentoring new employees, developing the ability to design and implement professional development for individual employees and the entire staff, as well as learning how to facilitate teaming that will impact achievement. A final unit in the course will assist the future leader in seeking a mentor for him/herself.

VIS 770. Legal & Ethical Foundations. 3 Hours.

The purpose of the course is twofold. 1) Candidates will gain a fundamental knowledge of ethical principles based on professional code of ethics and guidelines, and 2) Candidates will gain a working knowledge of legal principles established by local, state, and federal legislative and judicial requirements.

VIS 771. Organ Leadership & Decision Making. 3 Hours.

This course is designed to strengthen knowledge and skills in the areas of effective leadership and decision making. From course readings and activities, candidates will increase their understanding of and skills in how they make decisions; how decision making occurs in an organizational setting; and how leaders approach decision making from multiple frames of reference.

VIS 773. Supervision & Personnel. 3 Hours.

This course is designed to develop knowledge of supervisory procedures. An in-depth exploration of strategies to support leaders will provide the impetus of this course. Each student will assess changes within organizations. Theories of Leadership Development will also be analyzed. Diversity in the 21st Century will be discussed for leadership in a culturally competent manner that embellished the work place setting.

VIS 774. Issues & Problems in Finance. 3 Hours.

This course is designed to develop knowledge of financing and funding procedures agencies and higher education. An in-depth exploration of how programs, research and agencies are financed in the US and the historical background of the development of finance laws and policy will provide the impetus of this course.

VIS 790. Individual Topics and Advanced Topics. 1-3 Hour.

VIS 798. Doctoral Level Non-Dissertation Research. 1-15 Hour.

VIS 799. Doctoral Level Dissertation Research. 1-15 Hour.

Prerequisites: GAC A

VS-Vision Science Courses

WS-Womens Studies Courses

Faculty Listing

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Aban, Inmaculada (Chichi) School of Public Health

Department of Biostatistics, Ph.D. (Bowling Green State), Associate Professor. Clinical Trials, Model Diagnostics, Survival and Reliability Analysis, Inference for Heavy Tailed Distributions.

Abney, Nancy G. The Graduate School
Graduate School Professional Development Program, TA Training, Teacher Training, English as a Second Language

Abou-Arroj, Ramzi School of Dentistry

Department of Clinical Dentistry, Assistant Professor (Periodontics); Periodontal regeneration and Implant dentistry, Esthetic soft tissue reconstruction, Periodontal-systemic conditions interrelationships.

Acosta, Edward College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Clinical Pharmacology); multicenter clinical trials designed to assess the absorption and disposition of antiviral and antiretroviral drugs

Adkins, Nell School of Health Professions

Department of Administration Health Services, Associate Professor (Accounting); Corporate Taxation, Market Effects of Taxation, Mergers and Acquisitions, Valuation of Intangible Assets

Affuso, Olivia Thomas School of Public Health

Department of Epidemiology, Associate Professor (Epidemiology), Chronic Disease Epidemiology, Physical Activity and Chronic Disease Prevention

Agarwal, Anupam College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Medicine); Regulation of heme oxygenase gene expression in kidney and vascular injury

Ahmad, Wajih School of Education

Department of Human Studies, Assistant Professor of Health Education, 1998, B.S., M.Ph., Ph.D. (UAB)

Aissani, Brahim College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Research Assistant Professor; Cancer control and population science

Alexander, J. Iwan School of Engineering
Department of Engineering, Dean and Professor of Engineering, 2013, B.Sc. (University College Swansea, Wales, U.K.); Ph.D. (United World College of the Atlantic, Wales, U.K.); Ph.D. (Washington State)

Alexandrov, Anne School of Nursing
Professor of Nursing, 2007, B.S.N., M.S.N. (Texas), Ph.D. (Texas Woman's University)

Aller, Stephen College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Pharmacology/Toxicology)

Allison, Carol School of Education

Department of Curriculum and Instruction, Instructor of Special Education (Visual Impairment), 1999, B.A. (Northwestern State), M.A. (UAB)

Allison, David College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Obesity, quantitative genetics, clinical trials, and statistical and research methodology

Allman, Richard M. School of Medicine

Professor (Medicine); Director, Birmingham/Atlanta VA Geriatric, Research, Education, and Clinical Center (GRECC); Mobility Impairment and Its Complications; Geriatric Care Quality Improvement

Almeida, Jonas S. School of Engineering

Department of Biomedical Engineering, Professor and Director, Division of Informatics (Department of Pathology); Computational Infrastructure for Integrative Bioinformatics, Computational infrastructure for integrative bioinformatics

Amsbary, Jonathan H. College of Arts and Sciences

Department of Communication Studies, Associate Professor of Communication Studies, 1988, B.A. (New Mexico), M.A., Ph.D. (Indiana)

Amsler, Charles D. Jr. College of Arts and Sciences

Department of Biology, Professor of Biology, 1994, A.B. (Duke), M.S. (North Carolina-Wilmington), Ph.D. (California-Santa Barbara), Marine Ecophysiology, Chemical Ecology, and Polar Biology

Amthor, Franklin R. College of Arts and Sciences

Department of Psychology, Professor of Psychology; Interim Director, Behavioral Neuroscience Doctoral Program; Associate Professor of Biomedical Engineering, 1981, B.S. (Cornell), Ph.D. (Duke)

Anantharamaiah, G. M. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Medicine; Apolipoproteins, Amphipathic Helices and Atherosclerosis

- Anayiotos, Andreas** School of Engineering
Department of Biomedical Engineering, Associate Professor (Engineering); Professor, Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Cardiovascular Fluid Mechanics, Cardiovascular Modeling, Computational Hemodynamics
- Anderson, Peter G.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pathology and Genomics Pathobiology); Cardiovascular pathology; education
- Andrews, J. Barry** School of Engineering
Department of Materials Science and Engineering, Professor of Materials Science and Engineering; Chair, Department of Materials Science and Engineering, 1976, B.S. (UAB), M.E., PhD. (Florida), P.E. (Alabama), Polymer and Metal Matrix Composites, Solidification, Physical Metallurgy
- Andrews, William W.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor
- Angus, Robert A.** College of Arts and Sciences
Department of Biology, Professor Emeritus of Biology, 1978, B.S. (Wisconsin), Ph.D. (Connecticut), Aquatic Toxicology
- Appleby, Don** School of Engineering
Department of Information Engineering and Management, Instructor Information Engineering Management; President, Incur Consulting, 2004, MSEE (UAB), Innovation, technology management, systems engineering
- Arnett, Donna** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., M.S.P.H., Professor; Genetic Epidemiology, Pharmacogenetics
- Arnett, Donna** School of Public Health
Department of Epidemiology, Professor and Chair (Epidemiology), Cardiovascular Genetic Epidemiology, Pharmacogenetics
- Atigadda, Venkatram** College of Arts and Sciences
Department of Chemistry, Research Assistant Professor of Chemistry, 2003, B.S. (Gulbarga-India), M.S., Ph.D. (Auburn)
- Atkinson, T. Prescott** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; immunodeficiencies, allergy, inflammation
- Austad, Steven** College of Arts and Sciences
Department of Biology, Professor and Chair (Biology), 2014, B.A. (UCLA), B.A. (California State-Northridge), Ph.D. (Purdue), Comparative Biogerontology, Assessment of Animal Healthspan, and Cellular and Molecular Mechanisms of Aging
- Austin, Julia S.** The Graduate School
Graduate School Professional Development Program, Program Director, Academic/Research Writing, English as a Second Language, Faculty-Teacher Development, TA Training, Extramural Funding
- Ayers, Douglas J.** School of Business
Department of Marketing, Industrial Distribution, Economics, Associate Professor of Marketing and Industrial Distribution, 1999, B.S., M.B.A. (Tennessee), Ph.D. (Kentucky)
- Azuero, Andres** School of Nursing
Associate Professor of Nursing, 2008, B.Sc. (University de Los Andes), M.B.A. (Louisiana State), Ph.D. (UAB)
- Bach, Rebecca Ann** College of Arts and Sciences
Department of English, Professor of English, 1994, B.A., M.A., Ph.D. (Pennsylvania)
- Bacha, Jeffrey** College of Arts and Sciences
Department of English, Assistant Professor of English, 2012, B.A. (University of Michigan-Flint), M.A. (Georgia State University), Ph.D. (Purdue), Rhetoric and Composition, Professional and Technical Communication
- Baddley, John** School of Health Professions
Department of Surgical Physican Assistant Studies, Associate Medical Director; Infectious Disease
- Badham, Amy** The Graduate School
Graduate School Professional Development Program, Academic/Research Writing and Publishing
- Bailey, Jennifer M.** School of Engineering
Department of Advanced Safety Engineering and Management, MSPH, CIH, CHMM, Adjunct Professor, Safety Manager, AMERICAN (American Cast Iron Pipe Company)
- Bailey, Shannon M.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor, Molecular Mechanisms of Chronic Alcohol and Obesity Induced Liver Diseases; Mitochondrial Dysfunction in Disease; Molecular Bioenergetics; Functional Proteomics; Free Radical Biology
- Baker, Elizabeth H.** College of Arts and Sciences
Department of Sociology, Assistant Professor of Sociology, 2012, B.A., M.A. (Bowling Green), Ph.D. (Pennsylvania State)
- Bakhrom, Berdiev** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Cell Biology The CFTR Chloride Channel control of Epithelial Sodium Channel under physiological and pathological conditions.
- Balkovetz, Daniel** College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Cell Biology, Medicine, Microbiology); Epithelial Cell Biology; Epithelial Cell Signal Regulation; Regulation of paracellular transport across epithelial cell tight junctions

Ball, Karlene K. College of Arts and Sciences

Department of Psychology, University Professor and Chair, Department of Psychology; Director, Center for Research in Applied Gerontology; Professor of Psychology, Associate Director, Comprehensive Center for Healthy Aging, 1996, B.A. (Indiana), M.S., Ph.D. (Northwestern)

Ballinger, Scott College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Pathology); Environmental cardiology, free radical biology, mitochondrial function

Bamman, Marcas College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Physiology Biophysics; skeletal muscle mass regulation

Bangalore, Purushotham College of Arts and Sciences

Department of Computer and Information Sciences, Associate Professor; Graduate Program Director Computer and Information Sciences, 2003, B.E. (Bangalore-India), M.S., Ph.D. (Mississippi State)

Barnard, Anthony C. L. College of Arts and Sciences

Department of Computer and Information Sciences, Professor Emeritus of Computer and Information Sciences, 1968, B.S. (Birmingham, England), M.B.A. (UAB), Ph.D., D.Sc. (Birmingham, England)

Barnes, Stephen College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pharmacology Toxicology), Site-directed mutagenesis of rodent liver bile acid CoA: amino acid N-acyltransferase (BAT) - this project involves a combination of molecular biology, enzymology and protein mass spectrometry; Molecular basis of prevention of eye cataract disease by polyphenol-containing dietary supplements; Site-specific modification of lens proteins by oxidants - this project involves protein mass spectrometry and other physical chemical techniques

Barnum, Scott R. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Neuroimmunology, complement, EAE, cerebral malaria

Barstow, Elizabeth A. School of Health Professions

Department of Occupational Therapy, Assistant Professor (Occupational Therapy), Ph.D., OTR/L, Low-Vision Rehabilitation, Neurodevelopmental Intervention, Functional Capacity Evaluations, Driver's Assessment

Bartolucci, Alfred A. School of Public Health
Department of Biostatistics, Professor Emeritus, Ph.D. (SUNY, Buffalo), Clinical Trials, Survival Analysis, Bayesian Statistics, Longitudinal Data Analysis.

Bashir, Khurram College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; neuroimmunology, MS

Basilico, David Anthony College of Arts and Sciences

Department of English, Associate Professor of English; Director, Linguistics Program, 1993, B.A. (Brown), Ph.D. (Arizona)

Bauldry, Shawn College of Arts and Sciences

Department of Sociology, Assistant Professor of Sociology, 2013, B.A. (Wake Forest), M.A. (U. Washington), M.S. (UNC Chapel Hill), Ph.D. (UNC Chapel Hill)

Beasley, Mark College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Methodological problems in statistical genetics and bioinformatics

Beasley, Timothy Mark School of Public Health

Department of Biostatistics, Associate Professor, Ph.D. (Southern Illinois - Carbondale), Linear Models, Linkage and Association with Quantitative Traits, Nonparametric Methods, Microarray Analysis.

Bebok, Zsuzsanna College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Associate Professor; Cell Biology; Membrane protein biogenesis in epithelial cells (CFTR as model); Unfolded protein response

Becker, David J. School of Public Health
Department of Health Care Organization and Policy, PhD, Professor

Bedwell, David College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Microbiology; Mechanism of Translation Termination and Therapies to Suppress Stop Mutations

Bej, Asim K. College of Arts and Sciences

Department of Biology, Professor of Biology, 1991, B.S., M.Sc. (Calcutta), Ph.D. (Louisville), Molecular Genetics and Genomics of Pathogens and Extremophiles

Bellis, Peter College of Arts and Sciences

Department of English, Professor of English; Chair, Department of English, 2007, B.A. (Amherst), M.A. (Texas-Austin), M.A., Ph.D. (Johns Hopkins)

Bellis, Susan College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Physiology Biophysics), The Role of Integrin Receptors in Human Biology and Disease

Beneviste, Etty College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Cell Biology; Understanding how the immune system and central nervous system communicate with each other

Benitez, Jorge College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor

Benjamin, William J. School of Optometry
Department of Vision Sciences, Professor (Optometry)

Berdiev, Bakhrom College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Assistant Professor; Cell Biology; The CFTR Chloride Channel control of Epithelial Sodium Channel under physiological and pathological conditions

Berner, Eta School of Health Professions

Department of Administration Health Services, Professor (Health Informatics), Evaluation of Clinical Decision Support Systems and Other Health Information Technologies

Berry, Joel L. School of Engineering
Department of Biomedical Engineering, Associate Professor of Biomedical Engineering, 2010, B.S., B.S.M.E., M.S.M.E. (UAB), Ph.D. (Wake Forest), Cardiovascular biomechanics and tissue engineering

Bethard, Steven J. College of Arts and Sciences

Department of Computer and Information Sciences, Assistant Professor of Computer and Information Sciences, 2013, B.A., B.S. (Arizona), Ph.D. (Colorado)

Bevensee, Mark College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Neurobiology, Physiology Biophysics); Cellular and Molecular Physiology of Acid-base Transporters and pH Regulation

Biasini, Fred J. College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology, Director, Developmental Psychology Doctoral Program, 1983, B.A., M.S., (St. Vincent), Ph.D. (Alabama)

Bickel, C. Scott School of Health Professions

Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Skeletal Muscle Function, Electrotherapeutics

Bidez, Martha Warren School of Engineering
Department of Biomedical Engineering, Professor of Engineering; Director, E-Learning and Professional Studies; Director, Advanced Safety Engineering and Management Program, 2010, B.S. (Auburn), B.S.M.E. (UAB), Ph.D. (UAB)

Biga, Peggy College of Arts and Sciences

Department of Biology, Assistant Professor of Biology, 2012, B.S., M.S. (Angelo State), Ph.D. (Idaho), Physiology and Developmental Biology

Bjornsti, Mary-Ann College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pharmacology and Toxicology); Cancer-based pharmacology and toxicology

Blalock, J. Edwin College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; pulmonary immunology

Blokh, Alexander College of Arts and Sciences

Department of Mathematics, Professor of Mathematics, 1992, Ph.D. (Kharkov State), Dynamical Systems

Blume, Scott W. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry Molecular Genetics, Medicine); Specific regulation of gene expression at the translational level - through sequence-specific RNA-binding proteins and complex 5'-untranslated RNA sequences; dysregulation of gene-specific translational control mechanisms in cancer

Bodin, Mary Beth School of Nursing
Assistant Professor of Nursing, 2004, B.S. (West Alabama), B.S.N., M.S.N., D.N.P. (UAB)

Boggiano, Mary M. College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology, 2000, B.A., M.A., Ph.D. (Texas at El-Paso)

Bolus, Norman E. School of Health Professions

Department of Clinical and Diagnostic Sciences, Assistant Professor and Program Director, Nuclear Medicine Technology Program, 1999, M.P.H. (UAB)

Boppana, Suresh College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor

Borovjagin, Anton School of Dentistry
Department of Clinical Dentistry, Instructor (Periodontics); Adenoviral vectors for gene therapy applications. Transductional re-targeting of adenoviral vectors to cancer cells.

- Borry, Erin L.** College of Arts and Sciences
Department of Public Administration, Assistant Professor (Government), 2013, B.A., M.P.A. (Rutgers), Ph.D. (Kansas)
- Bowen, David M.** School of Health Professions
Department of Health Informatics, Adjunct Professor (Health Services Administration)
- Bowen, Pamela** School of Nursing
Assistant Professor of Nursing, 2005, B.S.N. (UAB), B.A. (Faulkner), M.S.N., Ph.D. (UAB)
- Bradley, Virginia G.** School of Medicine
Associate Professor (Social and Behavioral Science Section); Cognition and Mobility, Dementia Caregiving, Loss of Capacity in Alzheimer's Disease
- Brande, Scott** College of Arts and Sciences
Department of Chemistry, Associate Professor of Chemistry, 1979, B.S. (Rochester), M.S. (California Institute of Technology), Ph.D. (SUNY-Stony Brook)
- Braswell, Mary Flowers** College of Arts and Sciences
Department of English, Professor of English, 1969, B.A., M.A. (Alabama), Ph.D. (Emory)
- Bray, Molly** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Molecular and genetic basis of obesity; genetic analysis of complex traits; gene-environment interaction; physical activity/exercise physiology; adipogenesis; genetics of response to obesity interventions
- Brazil, James** College of Arts and Sciences
Department of English, Assistant Professor of English; Co-Director, Creative Writing Program, 2010, B.A. (Georgia), M.F.A (Bowling Green State)
- Brenner, Michael** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Neurobiology; Molecular Studies of Astrocytes in Health and Disease
- Bridges, S. Louis** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Professor; Genetic Influences on Treatment Responses in Rheumatoid Arthritis, particularly in African-Americans, and pharmacogenetics of rheumatoid arthritis
- Briles, David** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Bacterial pathogenesis; virulence; immunity; pneumococcus
- Britt, Bill** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor
- Britt, Sylvia E.** School of Nursing
Assistant Professor of Nursing, 2007, B.S.N. (Medical College of Georgia), M.S.N., D.S.N. (UAB)
- Brock, Joanne** School of Health Professions
Department of Clinical and Diagnostic Sciences, Assistant Professor, M.S.
- Bronstein, Janet M.** College of Arts and Sciences
Department of Public Administration, Professor (Health Care Organization and Policy): Health services utilization, health policy, community-based organizations; Co-coordinator of M.P.A.-M.P.H. degree program, School of Public Health.
- Broome, James** School of Dentistry
Department of Clinical Dentistry, Professor (Prosthodontics), Polymers, Adhesives, Physical and Mechanical Testing, Clinical Research
- Brott, Brigitta** School of Engineering
Department of Biomedical Engineering, Associate Professor, Division of Cardiovascular Disease (Department of Medicine), Angiogenesis, cardiac angioplasty, coronary artery disease, cardiac catheterization, interventional cardiology and stents
- Brouillette, Christie G.** College of Arts and Sciences
Department of Chemistry, Emeritus Research Professor of Chemistry, 2006, B.S. (West Florida), Ph.D. (Kansas)
- Brouillette, Wayne J.** College of Arts and Sciences
Department of Chemistry, Emeritus Professor of Chemistry, 1979, B.S. (West Florida), M.S., Ph.D. (Kansas)
- Brown, David** School of Engineering
Department of Biomedical Engineering, Professor and Program Director in Rehabilitation (Department of Physical Therapy), Clinical outcomes associated with balance and locomotor activities
- Brown, Elizabeth** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Immunogenetics of autoimmune disease, infectious disease and virally-associated cancers
- Brown, Michelle** School of Health Professions
Department of Clinical and Diagnostic Sciences, Assistant Professor, 2008, M.S. (UAB)
- Buchsbaum, Donald** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Cancer immunotherapy

- Bucy, R. Pat** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; T cell immunology
- Bullard, Daniel C.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Regulation of Inflammatory Responses, Pathogenesis of Lupus and Vasculitic Disorders
- Burgess, John O.** School of Dentistry
Department of Clinical Dentistry, Professor (Prosthodontics), DDS, Clinical trials, Caries models, Dental materials
- Burke, Darrell** School of Health Professions
Department of Health Administration, Associate Professor (Health Services Administration), Operations Management, Health Informatics; Quality Improvement; IT Management
- Burke, Donald** School of Engineering
Department of Advanced Safety Engineering and Management, Instructor, Ph.D. (UAB)
- Burns, Joseph C.** School of Education
Department of Curriculum and Instruction, Associate Professor of Elementary and High School Education, 1984, B.S. (Grove City), M.Ed., Ed.D. (Georgia)
- Burns, Richard M.** School of Business
Department of Accounting and Finance, Professor of Finance, 1987, B.S. (Alabama), M.B.A. (UAB), Ph.D. (Georgia)
- Burrows, Peter D.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Microbiology; Lymphocyte Development and Function
- Busetini, Claudio** School of Optometry
Department of Vision Sciences, Assistant Professor (Vision Sciences)
- Byrd, Jim** School of Business
Department of Accounting, Instructor of Accounting, 2013, B.S. (Auburn), M.B.A. (Georgia State), M.A., Ph.D. (UAB), CPA, CHFP
- Cadieux, Randy E.** School of Engineering
Department of Advanced Safety Engineering and Management, MS, MEng, Program Manager and Instructor
- Calhoun, Charles** School of Education
Department of Curriculum and Instruction, Associate Professor of Elementary Education, 1989, B.A. (Earlham), M.A.Ed., Ph.D. (Georgia State)
- Callahan, Dale** School of Engineering
Department of Electrical and Computer Engineering, Associate Professor of Electrical and Computer Engineering; Director, Information Engineering and Management, 2000, B.E.E. (Auburn), M.B.A. (Auburn-Montgomery), M.S.E.E. (UAB), Ph.D. (Alabama), P.E. (Alabama), Entrepreneurship, Innovation and Social Media
- Camata, Renato** College of Arts and Sciences
Department of Physics, Associate Professor of Physics, 2000, B.S. (Universidade de São Paulo), M.S., Ph.D. (Caltech), Aerosol processes in nanomaterials fabrication; nanostructured materials; laser synthesis and properties of semiconductor, electroceramic and bioceramic thin films
- Campbell, Ginger** School of Engineering
Department of Biomedical Engineering, Professor (Emergency Medicine), Mind-body medicine, the brain and consciousness
- Capriotti, Emidio** School of Engineering
Department of Biomedical Engineering, Assistant Professor, Division of Informatics (Pathology), Protein structural prediction by threading methods and building by homology, Molecular dynamics of protein systems, Protein folding kinetics
- Carpenter, Randy** School of Health Professions
Department of Health Informatics, M.S.H.I., Adjunct Professor (Health Services Administration)
- Carroll, Steven** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Cell Biology, Neurobiology, Pathology); The Role of Neuregulin-1 in Peripheral Nervous System Neoplasia
- Carson, April** School of Public Health
Department of Epidemiology, Assistant Professor (Epidemiology); Cardiovascular Epidemiology, Diabetes Epidemiology, Health Disparities
- Carter, Kellie R.** The Graduate School
Graduate School Professional Development Program, Presentation and Discussion Skills, Mentoring
- Caruthers, Kara** School of Health Professions
Department of Surgical Physican Assistant Studies, Assistant Professor; Emergency Medicine
- Casazza, Krista** School of Health Professions
Department of Nutrition Sciences, PhD, RD Assistant Professor (Nutrition Sciences); Resource partitioning during critical periods of growth and development with primary focus on the bone-fat interface.
- Catledge, Shane A.** College of Arts and Sciences

Department of Physics, Assistant Professor of Physics, 2004, B.S. (California State –Sacramento), Ph.D. (UAB), Synthesis and properties of nanostructured super-hard materials; chemical vapor deposition (CVD) of diamond films and novel nanostructured coatings for industrial cutting and biomedical implant applications; molecular sensing using fluorescent nanodiamond; mechanical properties

Chamot, Eric School of Public Health
Department of Epidemiology, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Screening, International Health and Global Studies

Chandler-Laney, Paula School of Health Professions
Department of Nutrition Sciences, PhD Assistant Professor (Nutrition Sciences); Use of behavioral and/or psychological parameters to predict success in weight loss and maintenance programs; the association between satiety hormones and subjective responses; and an investigation of childhood body composition and metabolic health consequences of intrauterine exposure to gestational diabetes and maternal obesity

Chang, Chenbei College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology); Signaling Transduction in Development and Diseases

Chang, Pi-Ling School of Health Professions
Department of Nutrition Sciences, PhD, Associate Professor (Nutrition Sciences); Vitamin D and Cancer, Osteoporosis, Bone-Matrix Proteins, Osteoblast Differentiation

Chaplin, David D. College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Lymphoid tissue development

Chapman, Alison College of Arts and Sciences
Department of English, Associate Professor of English; Director, Undergraduate Studies, 2000, B.A. (Davidson), M.A., Ph.D. (Pennsylvania)

Chatham, John College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, D. Phil., Associate Professor; Medicine; Cardiomyocyte function and metabolism in diabetes and ischemic heart disease

Chaudry, Irshad College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Microbiology, Pathology, Physiology Biophysics); Cardiovascular/ Immunological Alterations Following Trauma-Sepsis

Chavali, Rama Kiran School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Prosthodontics); Clinical research in endosseous dental implants

Chawla, Krishan Kumar School of Engineering
Department of Materials Science and Engineering, Professor Emeritus of Materials Science and Engineering, 1998, B.S. (Banaras Hindu, India), M.S., Ph.D. (Illinois, Urbana-Champaign), Metal, Ceramic, and Polymer Matrix Composite Materials; Fibers; Foams

Chen, Ching-Yi College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Biochemistry and Molecular Genetics)

Chen, Dongquan School of Health Professions
Department of Health Informatics, Ph.D., Research Assistant Professor (Health Services Administration)

Chen, Haiyan School of Dentistry
Department of Clinical Dentistry, Instructor (Oral Maxillofacial Surgery); Transcriptional control of bone cell differentiation and bone repair.

Chen, Yabing College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Pathology); Gene Regulation in the Pathogenesis of Cardiovascular diseases, Osteoporosis and Cancer

Cheng, Gary School of Engineering
Department of Mechanical Engineering, Associate Professor of Mechanical Engineering, 2001, B.S. (Tamkang, Taiwan), M.S., Ph.D. (Kansas)

Cheong, JeeWon School of Public Health
Department of Health Behavior, Assistant Professor

Chernov, Nikolai College of Arts and Sciences
Department of Mathematics, Professor of Mathematics, 1994, M.S., Ph.D. (Moscow State, Russia), Dynamical Systems, Ergodic Theory

Chesnokov, Igor College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics); DNA Replication, Cell Division, Cell Cycle Regulation

Chiasera, Janelle School of Health Professions
Department of Clinical and Diagnostic Sciences, Associate Professor, 2006, Ph.D. (Ohio State)

Childers, Noel K. School of Dentistry
Department of Clinical Dentistry, Professor (Pediatric Dentistry); Streptococcus mutants, Dental caries, Oral immunization, Liposomes.

Childers, Noel K. College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; mucosal immunology, oral pathogens

- Childs, Gwendolyn** School of Nursing
Assistant Professor of Nursing, 2007, B.S.N. (Lander), M.S.N. (Medical College of Georgia), Ph.D. (South Carolina)
- Cho, June** School of Nursing
Assistant Professor of Nursing, 2008, B.S.N. (Catholic), M.S.N. (Yonsei), Ph.D. (North Carolina, Chapel Hill)
- Chow, Louise T.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Biochemistry and Molecular Genetics); Human Papillomavirus, Genetics, Keratinocytes, DNA Replication, Electron Microscopy
- Christensen, Lois M.** School of Education
Department of Curriculum and Instruction, Professor of Early Childhood and Elementary Education, 1996, B.A., M.A.Ed. (Arizona State), Ph.D. (Texas AM)
- Christian, Becky J.** School of Nursing
Professor of Nursing, 2009, B.S.N., M.S.N. (Missouri), Ph.D. (Texas)
- Christy, Jennifer Braswell** School of Health Professions
Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Pediatrics; Vestibular Dysfunction
- Clabough, Jeremiah** School of Education
Department of Curriculum and Instruction, Assistant Professor, (Secondary Education) Social Sciences, 2012, B.A. (Maryville College), M.S., Ph.D. (Tennessee)
- Clair, Jeffrey Michael** College of Arts and Sciences
Department of Sociology, Associate Professor of Sociology, 1989, B.A., M.A. (San Diego); Ph.D. (Louisiana State)
- Clark, Diane** School of Health Professions
Health Focused Patient/Client Management for Physical and Occupational Therapists, PT, DScPT, MBA, Assistant Professor of Physical Therapy
- Clay, Olivio** College of Arts and Sciences
Department of Psychology, Associate Professor of Psychology, 2007, B.S., M.A., Ph.D. (UAB)
- Clelland, Jo Ann** School of Health Professions
Department of Physical Therapy, Professor Emerita (Physical Therapy); Pain Management
- Clements, Kay** School of Health Professions
Department of Health Services Administration, Associate Professor and Program Director, Health Information Management Program, 2004, M.A. (UAB)
- Clines, Gregory A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Endocrinology)
- Clinton, Sarah** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Psych – Behavioral Neurobiology; Neurodevelopmental and environmental factors that underlie susceptibility to anxiety and depression
- Cockerham, William C.** College of Arts and Sciences
Department of Sociology, Distinguished Professor of Sociology; Chair, Department of Sociology; Professor of Medicine; Co-Director, Center for Social Medicine and STDs, 1991, B.A. (Oklahoma), M.A., Ph.D. (California-Berkeley)
- Cofield, Stacy S.** School of Public Health
Department of Biostatistics, Ph.D. (Virginia Commonwealth), Associate Professor. Mixed-Effects Models, Clinical Trial Design, Management, and Analysis, Out-of-Hospital Cardiac Arrest and Resuscitation.
- Coke, John M.** School of Dentistry
Department of Clinical Dentistry, Professor (General Dental Sciences): Oral Medicine, Clinical Pharmacology, Hospital Dentistry
- Collawn, James** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Cell Biology; Cystic Fibrosis; Endocytosis; Protein Trafficking
- Collins, Loucrecia** School of Education
Department of Human Studies, Associate Professor of Educational Leadership, 2000, B.S., M.A., Ed.D. (Mississippi State)
- Cong, Yingzi** College of Joint Health Sciences
Department of Biochem and Molecular Genetics, Ph.D., Assistant Professor; Medicine; Host mucosal immune response to commensal bacterial antigens and the pathogenesis of inflammatory bowel diseases
- Conley, Carolyn A.** College of Arts and Sciences
Department of History, Professor of History; Chair, Department of History, 1985, B.A. (Duke), M.A. (Chicago), Ph.D. (Duke)
- Conner, David A.** School of Engineering
Department of Electrical and Computer Engineering, Professor Emeritus and Chair Emeritus of Electrical and Computer Engineering, 1978, B.E.E., (Auburn), Ph.D. (Georgia Institute of Technology), P.E. (Alabama, Tennessee, Kentucky), Electrical Circuit Analysis and Design, Reverse Engineering of Electrical Systems, Mathematical Modeling of Electrical Systems
- Cook, Edwin** College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology,
Director, Medical/Clinical Psychology Doctoral Program, 1986, B.S.
(Pennsylvania), M.S., Ph.D. (Wisconsin)

Coombs, David School of Public Health

Department of Health Education and Health Promotion, Associate
Professor Emeritus, SOPH Health Behavior

Copes, J. Heith College of Arts and
Sciences

Department of Justice Sciences, Associate Professor and Director,
Master of Science in Criminal Justice Program, 2001, B.S.
(Southwestern Louisiana), M.A., Ph.D., (Tennessee), Qualitative
Methods, Criminal Decision Making, White Collar Crime, Policing

Corley, Robert G. College of Arts and
Sciences

Department of History, Assistant Professor of History, 1993, B.A.
(Birmingham-Southern), M.A., Ph.D. (Virginia)

Cormier, Loretta College of Arts and
Sciences

Department of Anthropology, Associate Professor of Anthropology, 2000,
B.S. (Florida), M.A. (UAB), Ph.D. (Tulane)

Cowart, Larry School of Business

Department of Accounting and Finance, Assistant Professor of Finance,
2007, B.S. (Athens), M.B.A. (Samford), Ph.D. (Georgia)

Cowell, Rita College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Assistant
Professor; Psychiatry Behavioral Neurobiology; Transcriptional
regulation of early postnatal brain development: Insights into the
pathology of Autism and Schizophrenia

Cox, James E. College of Arts and
Sciences

Department of Psychology, Associate Professor (Psychology);
Physiological Psychology, Obesity

**Cox-Edmondson,
Vicki** School of Health
Professions

Department of Administration Health Services, Associate Professor
(Management): Strategy, Entrepreneurship, Corporate Social
Responsibility and Business Ethics, Organizational Behavior, and
Constraints Management

Crasto, Chiqito J. College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor
(Genetics)

Crider, Kyle College of Arts and
Sciences

Department of Public Administration, MPA, LEED. Manager, Education
Corporation of America. Information management in government.

Crigler, Paul School of Business

Department of Management, Information Systems, and Quantitative
Methods, Instructor of Information Systems, 2004, B.S. (Auburn); B.S.,
M.S. (UAB)

Cron, Randy College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Associate
Professor; Immunotherapy

Crowe, Michael College of Arts and
Sciences

Department of Psychology, Associate Professor of Psychology, Assistant
Director of the Center for Research on Applied Gerontology, 2006, B.S.
(Illinois), M.A., Ph.D. (Southern California)

Cui, Xiangqin College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Research
Assistant Professor; Splicing array design; Equivalence tests for large
dimension data produced by microarrays

**Cummings, Cathleen
A.** College of Arts and
Sciences

Department of Art Art History, Associate Professor of Art History, 2006,
B.A. (Mills College), M.A. (University of London), M.A. and Ph.D. (Ohio
State)

**Cunningham,
Anthony "Deek"** School of Health
Professions

Department of Occupational Therapy, Assistant Professor (Occupational
Therapy), Academic Coordinator of Fieldwork Education, MSOT, OTR/L,
Mental Health, Pediatrics, Burns and Trauma

Curcio, Christine A. School of Optometry

Department of Vision Sciences, Professor (Ophthalmology)

Cusic, Anne M. College of Arts and
Sciences

Department of Biology, Associate Professor of Biology, 1988, B.S.
(UAB), M.S. (Samford), Ph.D. (UAB), General Biology and Reproductive
Biology

Cutter, Gary School of Public Health

Department of Biostatistics, Ph.D. (Texas Health Science Center -
Houston), Professor and Head of the Section on Research Methods and
Clinical Trials. Clinical Trials and Community Studies Trial Analyses,
Chronic Disease Epidemiology, Large Scale Data Bases, Multiple
Sclerosis, Myasthenia Gravis and Neonatal Trials, Behavioral Studies.

Dahle, Karen B. School of Education

Department of Curriculum and Instruction, Associate Professor of
Special Education, 1999, B.S. (James Madison), M.S. (Radford), Ed.D.
(Virginia Tech)

Dale, Louis College of Arts and
Sciences

Department of Mathematics, Professor of Mathematics; Vice President
for Equity and Diversity, 1973, B.A. (Miles), M.S. (Atlanta), Ph.D.
(Alabama), Ring Theory

- Dallow, Jessica** College of Arts and Sciences
Department of Art History, Associate Professor of Art History, 2002, B.A. (San Diego), M.A., Ph.D. (North Carolina-Chapel Hill)
- Daniels, Melissa** College of Arts and Sciences
Department of English, Professor of English, 2013, B.A. (University of La Verne), M.A. (Georgia), Ph.D. (Emory)
- Darley-Usmar, Victor** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pathology); Failure of the vasculature; Production of free radicals and their interactions; Molecular events controlling NO signaling pathways
- DasGupta, Manabendra** School of Business
Department of Marketing, Industrial Distribution, Economics, Associate Professor of Economics, 1990, B.A., M.A. (Calcutta), M.A., Ph.D. (Southern Methodist)
- Davies, Susan** School of Public Health
Department of Health Education and Health Promotion, Associate Professor, SOPH, Health Behavior
- Davis, Allen Conan** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences); Oral health literacy and prevention, Access to care, Public health and community focused oral health activities
- Davis, Colin J.** College of Arts and Sciences
Department of History, Professor of History, 1991, B.A. (Warwick-Coventry, England), M.A., Ph.D. (SUNY-Binghamton)
- Davis, Randall S.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Biochemistry Molecular Genetics, Medicine, Microbiology); Lymphocyte development and mechanisms of lymphomagenesis
- de los Campos, Gustavo** School of Public Health
Department of Biostatistics, Ph.D. (University of Wisconsin-Madison). Assistant Professor, Section on Statistical Genetics. Quantitative Genetics, Statistical Learning and Prediction, Semi-parametric and Bayesian Methods.
- De Luca, Maria** School of Health Professions
Department of Nutrition Sciences, PhD Associate Professor (Nutrition Sciences); Genetics of fat storage and innate immune function, Obesity, Aging.
- De Sarno, Patricia** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor, Psychiatry and Behavioral Neurobiology; the role of glycogen synthase kinase-3 (GSK3) in Experimental Autoimmune Encephalomyelitis
- Dean, Derrick R.** School of Engineering
Department of Materials Science and Engineering, Associate Professor of Materials Science and Engineering, 2004, B.S., M.S. (Tuskegee), Ph.D. (Illinois, Urbana-Champaign), Structure-Property Relationships of Polymers and Multiphase Polymer Systems, including Blends; Nano- and Micro-Composites
- DeCarlo, Thomas E.** School of Business
Department of Marketing, Industrial Distribution, Economics, Professor of Marketing and Industrial Distribution, 2007, B.S. (N. Carolina State), Ph.D. (Georgia)
- Dell'Italia, Louis** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Medicine); Cardiovascular Disease
- DeLucas, Lawrence J.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Optometry), Protein Crystal Growth
- Delzell, Elizabeth** School of Public Health
Department of Epidemiology, Professor (Epidemiology); Occupational Epidemiology, Chronic Disease Epidemiology, Cancer Epidemiology, Pharmacoepidemiology
- Demark-Wahnefried, Wendy** School of Health Professions
Department of Nutrition Sciences, PhD, RD Professor and Webb Endowed Chair of Nutrition Sciences; diet/hormonal/genetic interactions and their association with cancer; dietary interventions and lifestyle for cancer prevention and survival
- Demshuk, Andrew T.** College of Arts and Sciences
Department of History, Assistant Professor of History, 2011, B.A. (Aquinas College), M.A. (Marquette), Ph.D. (Illinois-Urbana)
- Denton, Betty G.** School of Health Professions
Department of Physical Therapy, Associate Professor Emerita (Physical Therapy); Curriculum Development
- Descartes, Maria** School of Health Professions
Department of Genetic Counseling, MD, Medical Director and Associate Professor of Genetics
- Detloff, Peter** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Mouse Models of Human Genetic Disorders

- Deutsch, Gerog** School of Engineering
Department of Biomedical Engineering, Associate Professor (Radiology),
Cognitive neuroscience and brain imaging
- Di Gangi, Paul** School of Business
Department of Management, Information Systems, and Quantitative
Methods, Assistant Professor of Information Systems, 2013, B.S.
(Quinnipiac), M.S. (George Washington), Ph.D. (Florida State)
- Dickinson, Dale A.** School of Public Health
Department of Environmental Health Sciences, Ph.D., Assistant
Professor and Graduate Program Director - , Molecular mechanisms
of the adaptive response to environmental toxicants and pollutants;
mechanism of action of naturally occurring compounds; induction of
glutathione; functional genomics proteomics of naturally occurring
compounds
- Ding, Qiang** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor
(Medicine); Molecular mechanisms of organ fibrosis
- Dobbins, Allen C.** School of Engineering
Department of Biomedical Engineering, Associate Professor of
Biomedical Engineering, 1996, B.Sc. (Dalhousie), B.S.E., M.S.E., Ph.D.
(McGill), Human and machine vision, Neural computation, Brain imaging,
Scientific visualization
- Dobbs, Joel** School of Business
Department of Management, Information Systems, and Quantitative
Methods, Entrepreneur in Residence, 2011, M.Sc. (UAB)
- Dobrunz, Lynn** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Neurobiology
Physiology Biophysics Synaptic Transmission and Plasticity in
Hippocampus
- Dokland, Terje** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Associate
Professor; Structure and assembly of viruses
- Dominick, Ann M.** School of Education
Department of Curriculum and Instruction, Assistant Professor of Early
Childhood and Elementary Education, 2010, B.A. (Auburn), M.A.Ed.
(UAB), Ed.D. (Vanderbilt)
- Dorsey, Amanda D.** School of Health
Professions
Department of Health Informatics, M.S.H.I., Instructor Assistant Program
Director (Health Services Administration)
- Doss, Harriet E. Amos** College of Arts and
Sciences
Department of History, Associate Professor of History, 1978, B.A. (Agnes
Scott), M.A., Ph.D. (Emory)
- Downs, J. Crawford** School of Engineering
Department of Biomedical Engineering, Professor (Ophthalmology) and
Director, Center for Ocular Biomechanics and Biotransport, Experimental
and computational ocular biomechanics, intraocular pressure and
physiologic signal telemetry, and 3D histomorphometry
- Downs, Lauren** College of Arts and
Sciences
Department of Anthropology, Visiting Assistant Professor, 2013, B.A.
(North Carolina), M.A., Ph.D. (Alabama)
- Drace, William R.** School of Health
Professions
Department of Surgical Physican Assistant Studies, Assistant Professor;
Director of Admissions; Cardiothoracic Surgery
- Drente, Patricia** College of Arts and
Sciences
Department of Sociology, Associate Professor of Sociology, 1999, B.A.
(Wisconsin), M.A., Ph.D. (Ohio State)
- Drexler, Steve** College of Arts and
Sciences
Department of Forensic Sciences, Adjunct Faculty; Conventional
Criminalistics
- Drnevich, Dawn** School of Business
Department of Accounting and Finance, Assistant Professor of
Accounting, 2010, Ph.D. (Texas Tech)
- Dudgeon, Brian J.** School of Health
Professions
Department of Occupational Therapy, Department Chair and Professor,
Ph.D., OTR/L, FAOTA
- Duncan, W. Jack** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor of
Management and University Scholar Emeritus
- Dwyer, Zoe. B.** School of Engineering
Department of Materials Science and Engineering, Assistant Professor
of Materials Science and Engineering; Assistant Dean for Undergraduate
Programs, 1999, B.S., M.S., Ph.D. (UAB)
- Dybvig, Kevin** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Pathogenic mechanisms of mycoplasmas
- Earwood, Martha** College of Arts and
Sciences
Department of Justice Sciences, Teaching Assistant Professor and
Director of Undergraduate Studies, 2003, B.S., M.S. (Georgia State),
Corrections, Victimology, Restorative Justice, Experiential Learning.

- Eberhardt, Alan** School of Engineering
Department of Biomedical Engineering, Professor of Biomedical Engineering, Associate Dean, School of Engineering, 1991, B.S., M.S. (Delaware), Ph.D. (Northwestern), Solid Mechanics, Injury Biomechanics, Biomedical Implants, Analytical and Numerical Methods in Biomechanics
- Edberg, Jeffery** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Genetic Polymorphisms in Wegener's Granulomatosis
- Edison, Christopher** School of Health Professions
Department of Occupational Therapy, Assistant Professor (Occupational Therapy), MSOT, OTR/L
- Eleazer, Paul** School of Dentistry
Department of Clinical Dentistry, Professor (Endodontics): Microbiology of waterlines, Microbiology of endontic anaerobic pathogens
- Elgavish, Gabriel A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Biochemistry and Molecular Genetics); Paramagnetic Probes for NMR Investigation of Membrane Transport
- Elias, Beth L.** School of Nursing
Assistant Professor of Nursing, 2009, B.S. (State University of New York), M.S., Ph.D. (Virginia)
- Elmets, Craig A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; dendritic cell biology
- Elson, III, Charles O.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Mucosal immunology
- Eltoum, Isam-Eldin** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pathology); Clinical research in diagnostic cytology and surgical pathology- Tumorigenesis of prostate cancer and chemoprevention - HPV infection
- Emfinger, Kay** School of Education
Department of Curriculum and Instruction, Associate Professor of Early Childhood and Elementary Education, 2003, B.S., M.A.Ed. (Auburn), Ph.D. (UAB)
- Enah, Comfort** School of Nursing
Assistant Professor of Nurisng, 2009, B.S.N. (Berea College), M.S.N., Ph.D. (Cincinnati)
- Engler, Jeffrey** The Graduate School
Graduate School Professional Development Program, Career Development, Extramural Funding
- Epps, Chad A.** School of Nursing
Associate Professor (Anesthesiology)
- Erlandsen, Heidi** School of Dentistry
Department of Clinical Dentistry, Instructor (Periodontics): Protein crystallography, molecular mechanisms of cell signaling, metabolic disease
- Ernest, James R.** School of Education
Department of Curriculum and Instruction, Associate Professor of Early Childhood and Elementary Education, 2010, B.A. (The University of Exeter, Exeter, England), M.A.Ed. (Louisiana State), Ph.D. (UAB)
- Ertas, Nevbahar** College of Arts and Sciences
Department of Government, Assistant Professor of Government, 2009, B.S., M.S. (METU, Ankara), Ph.D. (Georgia State and Georgia Institute of Technology)
- Eto, Isao** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Nutrition Sciences); Nutritional Biochemistry, Folate Metabolism and Interactions, Cancer Biology and Biochemistry
- Etterer, Judith** School of Engineering
Department of Advanced Safety Engineering and Management, MSPH, Adjunct Professor; Staff Assistant, Mine Safety and Health Administration
- Evans, Retta** School of Education
Department of Human Studies , Associate Professor of Health Education, 2003, B.S., (Fort Hays), M.S. (Northeastern), Ph.D. (Arkansas)
- Everts, Maaik** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Pathology); Gene therapy and nanotechnology
- Falany, Charles** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pharmacology Toxicology); Biochemical and physiological properties of human cytosolic sulfotransferases
- Fanucchi, Michelle** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Environmental Health Sciences; Pulmonary cell biology and toxicology. Cell-to-cell interactions in the developing lung as well as in repair after lung injury and disease in children. The role of biochemical defense mechanisms native to pulmonary cells. Childhood lung disease and its etiology. Drug metabolism.

- Fast, Vladimir G.** School of Engineering
Department of Biomedical Engineering, Associate Professor of Biomedical Engineering, 1997, Diploma in Physics (Moscow Institute), Ph.D. (Moscow Institute for Physics and Technology), Optical imaging of electrical and ionic activity in the heart mechanisms of cardiac arrhythmias and defibrillation
- Fathallah-Shaykh, Hassan** College of Arts and Sciences
Department of Applied Mathematics, Associate Professor (Neurology), Mathematical Biology, Systems biology of cancer, Dynamics of molecular networks, Biological rhythms
- Feldman, Dale S.** School of Engineering
Department of Biomedical Engineering, Associate Professor of Biomedical Engineering, 1985, B.S. (Northwestern), M.S. (Dayton), Ph.D. (Clemson), Biomaterials, Soft-tissue biomechanics, Polymeric implants
- Feldman, Glenn A.** College of Arts and Sciences
Department of History, Professor of History, 2012, B.S., B.A., M.A. (Birmingham-Southern), M.A., Ph.D. (Auburn)
- Feng, Xu** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Pathology); Cell Signaling and Gene Expression Regulation in Bone and Cancer Cells
- Fernandez, Jose** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor and Vice Chair for Education; Identification of genes contributing to racial differences in obesity, diabetes, and cancer: the genetic admixture approach
- Ferniany, I. William** School of Health Professions
Department of Health Administration, Professor (Health Services Administration), Governance, Strategic Planning, Leadership
- Ferreira, Andre** School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Orthodontics); Temporary anchorage, self ligation
- Fidopiastis, Cali** School of Health Professions
Department of Rehabilitation Sciences, Assistant Professor, (Physical Therapy); Virtual Rehabilitation, Brain-Computer Interfaces, Tests and Measurements
- Fiedler, Robin** School of Education
Department of Human Studies, Assistant Professor, 2008, Measurement, Educational Psychology, Educational Statistics
- Filler Steven J.** School of Dentistry
Department of Clinical Dentistry, Professor (General Dental Sciences); Medically compromised patients, Oral microbiology
- Fineberg, Naomi** School of Public Health
Department of Biostatistics, Ph.D. (Boston University), Research Professor and Chair. Small Medical Studies.
- Fisher, Gordon** School of Education
Department of Human Studies, Assistant Professor, 2012, Exercise Physiology; Exercise/Nutrition, Mitochondrial Bioenergetics, Oxidative Stress, and Chronic Inflammation
- Fiveash, John** School of Engineering
Department of Biomedical Engineering, Associate Professor (Radiation Oncology), Clinical trials of novel therapeutics in combination with radiation therapy, particularly in the treatment of brain and prostate tumors; treatment planning research and education IMRT and IGRT
- Flammini, Steve** School of Health Professions
Department of Health Informatics, Credit Course Instructor (Health Services Administration)
- Fleisig, Glenn S.** School of Engineering
Department of Biomedical Engineering, Adjunct Professor, 1997, B.S. (M.I.T.), M.S. (Washington University), Ph.D. (UAB), Sports medicine
- Floyd II, H. Landis** School of Engineering
Department of Advanced Safety Engineering and Management, PE, CSP, CMRP, Fellow IEEE, Adjunct Professor and Principal Consultant Global Electrical Safety Competency Leader, DuPont
- Floyd, Candace** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Neurobiology Neuronal-Glial Interactions in Traumatic Brain and Spinal Cord Injury
- Fly, Debbie** School of Education
Department of Curriculum and Instruction, Instructor (Elementary Education)
- Fogger, Susanne** School of Nursing
Associate Professor of Nursing, 2010, B.S.N. (Wayland Baptist University), M.S.N., D.N.P. (South Alabama)
- Foley, Robin D.** School of Engineering
Department of Materials Science and Engineering, Associate Professor of Materials Science and Engineering, 1990, B.S., M.S. (Illinois, Urbana-Champaign), Ph.D. (Wisconsin-Madison), Materials Characterization, Physical Metallurgy, Metals Casting
- Fontaine, Kevin** School of Public Health
Department of Health Behavior, Professor
- Forbes, Laura** School of Education
Department of Human Studies, Assistant Professor of Health Education, 2005, B.S. (Ball State), M.S. (Central Florida), Ph.D. (South Carolina)
- Ford, Matthew** School of Health Professions
Department of Rehabilitation Sciences, Associate Professor (Physical Therapy); Motor Control Dysfunction

- Foster, E. Michael** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor
- Fouad, Fouad H.** School of Engineering
Department of Civil, Construction, and Environmental Engineering,
Professor of Civil, Construction and Environmental Engineering; Chair,
Department of Civil, Construction and Environmental Engineering;
Associate Director, University Transportation Center for Alabama, 1981,
B.S.C.E. (Alexandria, Egypt), M.S.C.E. (Texas), Ph.D. (Texas AM),
P.E. (Alabama, Texas), Structural Engineering, Reinforced Concrete,
Concrete Materials
- Frank, Stuart J.** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Professor (Cell
Biology, Medicine, Physiology Biophysics); Growth Hormone Action and
GH Receptor Structure and Function
- Franklin, Frank A.** School of Public Health
Department of Health Education and Health Promotion, Professor
Emeritus, SOPH Health Behavior
- Franklin, Gregory A.** School of Engineering
Department of Electrical and Computer Engineering, Assistant Professor
of Electrical and Computer Engineering, 2007, B.S.E.E., M.S.E.E., Ph.D.
(UAB), P.E. (Alabama), Power Line Communications, Power System
Protection and Control, and Power System Modeling
- Freedman, David O.** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Professor;
immuno-parasitology, tropical medicine
- Friday, R. David** School of Health
Professions
Department of Health Informatics, M.S.H.I., Adjunct Instructor (Health
Services Administration)
- Frolov, Ilya** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Professor;
Replication and pathogenesis of positive-strand RNA viruses
- Frolova, Elena** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Assistant
Professor; Alphavirus-host interaction
- Frost, Andra R.** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Associate
Professor (Cell Biology, Pathology); Fibroblast-Epithelial Cell Interactions
and Developmental Pathways in Breast Cancer
- Fu, Yuchang** School of Health
Professions
Department of Nutrition Sciences, PhD Associate Professor (Nutrition
Sciences); Gene Expression and Regulation Related to Lipid Metabolism
in Atherosclerosis and Diabetes
- Fuhr, Patti S.** School of Optometry
Department of Vision Sciences, Clinical Associate Professor (Optometry)
- Fujihashi, Kohtaro** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, D.D.S., Ph.D.,
Professor; Pediatric Dentistry; The Cellular and Molecular Mechanisms
for Mucosal Immunity in the Elderly; Molecular and Cellular Mechanisms
for the Induction and Regulation of Mucosally Induced Tolerance; A
Mucosal Internet Of gd, ab T Cells and Epithelial Cells for Mucosal
Immunity
- Fullard, Roderick J.** School of Optometry
Department of Vision Sciences, Associate Professor (Vision Sciences)
- Fuller, Catherine** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Associate
Professor (Physiology Biophysics); ENaC/ASIC Ion Channels
- Galin, Shawn F.** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor
(Medicine)
- Galvin, Melissa** School of Public Health
Department of Health Education and Health Promotion, Professor,
SOPH, Health Behavior
- Gamlin, Paul** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Vision Sciences, Studies of the neural bases of vision eye movements
- Gampher, J. Eric** College of Arts and
Sciences
Department of Psychology, Assistant Professor of Psychology, 2008,
B.S. (Florida State), Ph.D. (UAB)
- Gao, Yi** School of Engineering
Department of Electrical and Computer Engineering, Assistant Professor
of Electrical and Computer Engineering, 2013, B.S., M.S. (Tsinghua
University, Beijing) M.S., Ph.D. (Georgia Tech), Image Analysis, Coputer
Vision, Shape Analysis, Medical Imaging and Bioinformatics
- Gardner, Elizabeth A.** College of Arts and
Sciences
Department of Justice Sciences, Associate Professor of Justice
Sciences, 2007, B.S. (Penn State), PhD. (Michigan State), Drug
Chemistry, Legal Highs, Laser Induced Breakdown Spectroscopy,
Pharmaceutical Spam
- Garfinkel, Mark** College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant
Professor; Environmental Health Sciences; Drosophila

- Gargiulo, Richard M.** School of Education
Department of Curriculum and Instruction, Professor of Special Education, 1982, B.A. (Hiram Scott), M.S. (Wisconsin-Milwaukee), Ph.D. (Wisconsin)
- Garrie, Robert L.** School of Health Professions
Department of Health Services Administration, Associate Professor, Health Information Management Program, 1990, M.P.A. (Roosevelt)
- Garvey, W. Timothy** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Butterworth Professor and Chair; Nutrition Sciences; molecular, metabolic, and genetic basis of type 2 diabetes mellitus, insulin resistance, and obesity
- Gaston, Sam** College of Arts and Sciences
Department of Public Administration, MPA. City Manager, Mountain Brook: City and county management, state and local government.
- Gawne, Timothy J.** School of Optometry
Department of Vision Sciences, Assistant Professor (Vision Sciences), Information processing in the cerebral cortex, Gamma-band brain activity and neurotransmitter metabolism in schizophrenia, Visual cortical evoked potential
- Geisinger, Maria** School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Periodontics); Regenerative techniques/materials, Periodontal-systemic interrelationships, optimizing periodontal esthetics
- Genau, Amber** School of Engineering
Department of Materials Science and Engineering, Assistant Professor of Materials Science and Engineering, 2010, B.S., M.S. (Iowa State); Ph.D. (Northwestern), Solidification Microstructure Analysis, 3D Image Characterization
- George, James F.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Surgery; Immune regulation of post-transplant vascular disease and allograft rejection
- George, Remo** School of Health Professions
Department of Clinical and Diagnostic Sciences, Assistant Professor, Nuclear Medicine Technology Program, 2008, M.S. (Mahtma Gandhi University)
- Geurs, Nicolaas** School of Dentistry
Department of Clinical Dentistry, Professor (Periodontics); Clinical periodontal research, Pharmacotherapeutics, Periodontal regeneration, Diagnostic systems, Periodontal disease and systemic effects Implant research, Implant healing, Early loading of implants, Site preparation, Bone grafting procedures
- Ghanta, Vithal K.** College of Arts and Sciences
Department of Biology, Professor of Biology, 1971, B.S. (G.C.W. College), M.S. (Banaras Hinda), Ph.D. (Southern Illinois), Research Interest: Cancer Immunology, Cancer Immunology
- Gilbert, Gregg H.** School of Dentistry
Department of Clinical Dentistry, Professor (General Dental Sciences); Oral Epidemiology, Dental Health Services
- Gilchrist, Roger L.** College of Arts and Sciences
Department of Biology, Associate Professor of Biology, 1999, B.S., M.S., Ph.D. (Wyoming), Human Anatomy and Physiology
- Gillespie, Yancey G.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Cell Biology, Microbiology); Molecular and Viral Therapy of Malignant Primary Brain Tumors
- Gilmer, Dianne** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Instructor of Civil, Construction, and Environmental Engineering, 2009, B.S. (Samford), Meng-CEM (UAB), Engineering Online Education, Learning Management System Applications, Student Retention in Online Learning Programs
- Ginter, Peter M.** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor
- Girkin, Christopher A.** School of Optometry
Department of Vision Sciences, Chair/Professor (Ophthalmology)
- Givan, Daniel** School of Dentistry
Department of Clinical Dentistry, Associate Professor (Prosthodontics and Biomaterials); Composite, Resin, Wear, Fatigue
- Glass, Jay** College of Arts and Sciences
Department of Forensic Sciences, Adjunct Faculty; Questioned Death Investigation
- Goepfert, Paul** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Immune responses to HIV
- Goepfert, Paul** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Immune responses to HIV

- Gohlke, Julia M.** School of Public Health
Department of Environmental Health Sciences, Ph.D., Assistant Professor - Main focus of research is development of methods to improve assessments of health threats, both nationally and globally, through application of novel bioinformatics and computational modeling approaches. Particular areas of interest include improving methods for incorporation of neurodevelopmental processes that distinguish children as a vulnerable population, health implications of energy policy and climate change, and environmental policy evaluation from a global health perspective.
- Goldman, Renitta L.** School of Education
Department of Curriculum and Instruction, Professor of Special Education, 1984, B.A. (Washington), M.S. (North Carolina State), Ph.D. (Missouri)
- Golightly, Beverly** School of Health Professions
Department of Health Informatics, M.S.H.A., Credit Course Instructor (Health Services Administration)
- Goodin, Burel** College of Arts and Sciences
Department of Psychology, Assistant Professor of Psychology and Anesthesiology, 2012, B.S. (Illinois College); M.A. (Boston University of Medicine); M.A., Ph.D (Maryland, Baltimore)
- Gower, Barbara A.** School of Health Professions
Department of Nutrition Sciences, PhD Professor (Nutrition Sciences); Endocrinology, Body Composition, Postmenopausal Hormone Replacement Therapy, Insulin Sensitivity
- Grady, Ellyn** College of Arts and Sciences
Department of Public Administration, MPA. Senior Vice President, Agency Impact and Resource Development, United Way of Central AL: Nonprofit management.
- Graham, Cecilia** School of Health Professions
Health Focused Patient/Client Management for Physical and Occupational Therapists, PT, PhD, Associate Professor of Physical Therapy
- Granger, Wesley M.** School of Health Professions
Department of Clinical and Diagnostic Sciences, Associate Professor and Program Director, Respiratory Therapy Program, 1996, Ph.D. (Medical College of Georgia)
- Grant, Gerry** School of Business
Accounting, Visiting Associate Professor (Accounting and Finance), Accounting Information Systems
- Grant, Joan** School of Nursing
Professor of Nursing, 1980, B.S.N. (North Alabama), M.S.N., D.S.N. (UAB)
- Grant, Merida** School of Engineering
Department of Biomedical Engineering, Assistant Professor (Psychiatry and Behavioral Neurobiology), Neurobiology of stress as a risk factor for onset and maintenance of unipolar depression; Imaging alterations in brain morphology, physiology and connectivity associated with early life stress in adults; Peripheral physiology and conditioning paradigms
- Grant, Terry** School of Business
Department of Accounting and Finance, Professor of Accounting, 2012, B.S. (Alabama), M.P.A. (Texas), Ph.D. (Florida)
- Graves, David E.** College of Arts and Sciences
Department of Chemistry, Professor of Chemistry; Chair, Department of Chemistry, 2003, B.S., Ph.D. (UAB)
- Graves, Lila V.** College of Arts and Sciences
Department of English, Associate Professor of English, 1976, B.S., M.A., Ph.D. (Auburn)
- Gray, Gary M.** College of Arts and Sciences
Department of Chemistry, Professor of Chemistry, 1983, B.S., Ph.D. (Lehigh)
- Gray, Richard A.** School of Engineering
Department of Biomedical Engineering, Adjunct, Associate Professor of Biomedical Engineering, 1997, B.S. (Bucknell), M.S., Ph.D. (Virginia), Cardiac electrophysiology
- Green, David G.** School of Engineering
Department of Electrical and Computer Engineering, Instructional Associate Professor of Electrical and Computer Engineering, 1981, B.S.E., M.S.E. (UAH), Collaborative Systems, Internet Applications, and Engineering Education
- Greer, Jennifer L.** The Graduate School
Graduate School Professional Development Program, Academic / Research Writing and Publishing, English as a Second Language
- Griffin, A. Hayden** College of Arts and Sciences
Department of Justice Sciences, Associate Professor of Justice Sciences, 2013, J.D. (University of Richmond), Ph.D. (University of Florida), Corrections, Policy, Drugs and Society, Law and Society
- Griffin, John A.** School of Engineering
Department of Materials Science and Engineering, Research Assistant Professor of Materials Science and Engineering, 2011, B.S.Mt.E, M.S.Mt.E. (UAB), Metals Casting, Testing and Characterization, Nondestructive Evaluation
- Grimes, Gary J.** School of Health Professions
Department of Health Informatics, Ph.D., Professor (Electrical and Computer Engineering)
- Grimes, John W.** College of Arts and Sciences

Department of Justice Sciences, Teaching Assistant Professor of Justice Sciences; Pre-Law Program Director, 2000, B.S. (UAB), J.D. (Cumberland), Intelligence Analytics, Military Law, Terrorism, Homeland Security

Grimes, L. Kyle College of Arts and Sciences

Department of English, Associate Professor of English, 1990, B.A. (Dartmouth), M.A., Ph.D. (Illinois)

Grizzle, William College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pathology); Biomarkers in Early Detection, Prognosis, Risk and Therapeutic Outcome; Anatomic and Clinical Pathology; Tissue Resources to Support Biomedical Research; Immunomodulation of Cancer; Aging and Cancer; Post-transcriptional Processing of Genetic Info

Gross, Alecia K. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Vision Sciences; Rhodopsin trafficking in rod cells and rhodopsin-mediated retinal degenerations

Grostick, Sara S. School of Health Professions

Department of Health Informatics, M.A., Associate Professor (Health Services Administration)

Grytz, Rafael School of Engineering

Department of Biomedical Engineering, Assistant Professor (Ophthalmology), Ocular biomechanics and mechanobiology with emphasis on multi-scale approaches

Guay-Woodford, Lisa College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Professor; Genetics; Genetics of renal disease, particularly polycystic kidney disease

Guest, Kristi C. College of Arts and Sciences

Department of Psychology, Assistant Professor of Psychology, 2003, B.S., M.A., Ph.D. (UAB)

Gunnels, Ken School of Business

Department of Management, Information Systems, and Quantitative Methods, Instructor of Information Systems, 2011, B.S. (UAB); M.B.A. (Samford); M.S., MIS, Ph.D. (Alabama)

Gunther-Canada, Wendy A. College of Arts and Sciences

Department of Government, Professor of Government; Chair, Department of Government, 1993, B.A. (Utah), M.A., Ph.D. (Rutgers)

Gurley, Dennis Keith School of Education

Department of Human Studies, Assistant Professor; (Leadership), 2012, Pre-Service and In-Service Development for School Leaders, Professional Learning Communities, and Organizational Theory

Hablitz, John College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Neurobiology; Cellular Mechanisms of Neurotransmission

Hadley, Mark School of Business

Department of Marketing, Industrial Distribution, Economics, Professor of Surgery; Professor of Marketing and Industrial Distribution; Spinal Surgery and Medical Equipment and Supplies Distribution, 2008, B.A. (Stanford), M.D. (Albany Medical College)

Hagood, James College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pediatrics); Role of Fibroblasts in Tissue Remodeling

Haider, Mohammad School of Engineering

Department of Electrical and Computer Engineering, Assistant Professor of Electrical and Computer Engineering, 2011, Ph.D. (Tennessee-Knoxville), Low-power Sensor Electronics, Wireless Telemetry, and Wireless Power Transfer

Hall, Randa S. School of Health Professions

Department of Health Administration, Assistant Professor (Health Services Administration); Medical Practice Management

Hall, Sean School of Education

Department of Human Studies, Visiting Assistant Professor, 2012, Counselor Education, Clinical Mental Health Counseling, Assessment and Intervention Techniques, Processes and Outcomes Research, Dropout Prevention

Hamilton, Denise School of Health Professions

Department of Health Administration, Instructor (Health Services Administration): Health Care Finance

Hamilton, Tracy P. College of Arts and Sciences

Department of Chemistry, Associate Professor of Chemistry, 1991, B.S., M.S., Ph.D. (Arkansas)

Hamilton, Virginia V. College of Arts and Sciences

Department of History, Professor and University Scholar Emerita (History); Twentieth-Century U.S., The South Since Reconstruction

Hammack, Glenn G. School of Health Professions

Department of Health Informatics, O.D., M.S.H.I., Assistant Professor (Health Services Administration)

Haque, Akhlaque College of Arts and Sciences

Department of Government, Associate Professor of Government 1995, 1995, B.S. (Dhaka), M.A., Ph.D. (Cleveland State)

Hardin, J. Michael School of Health Professions

Department of Health Informatics, Ph.D., Credit Course Instructor
(Health Services Administration)

Hardy, Robert College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Associate
Professor (Pathology); Cancer cell metastasis

Harper, Curt College of Arts and
Sciences

Department of Forensic Sciences, Instructor; Forensic Toxicology

Harper, Doreen School of Nursing
Professor and Dean of Nursing, 2005, B.S.N. (Cornell), M.S.N.
(Catholic), Ph.D. (Maryland)

Harrelson, Paul M. School of Health
Professions

Department of Surgical Physican Assistant Studies, Assistant Professor,
Associate Program Director; Pain Management

Harrington, Laurie E. College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Assistant
Professor; T cell memory

Harris, Yolanda School of Nursing
Instructor of Nursing, 2011, B.S.N. (Samford), M.S.N. (UAB)

Harrison, Joseph G. College of Arts and
Sciences

Department of Physics, Associate Professor of Physics, 1986, B.S.
(Texas AM), M.S., Ph.D. (Wisconsin - Madison), Solid-state theory;
atomic and molecular physics; MRI modeling; chemical kinetics;
simulation of nonparticle-facilitated hyperthermia

Hartman, IV, John L. College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, M.D., Assistant
Professor; Genetics; Quantitative analysis of genotype-phenotype
interaction networks in yeast models of human disease

Hasan, Mohammad School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Oral and
Maxillofacial Surgery); Molecular function of non-coding RNA,
transcription factor and epigenetic regulation of osteoblast differentiation

Hasan, Ragib College of Arts and
Sciences

Department of Computer and information Sciences, Assistant Professor
of Computer and Information Sciences, 2011, B.S. (Bangladesh), M.S.,
Ph.D. (Illinois Urbana-Champaign)

Hazelwood, Kim College of Arts and
Sciences

Leonardo Art and Engineering Graduate Certificate, Program Manager II

Heaton, Karen School of Nursing
Assistant Professor of Nursing, 2008, BSN (UAB), MSN (Louisville)
Ph.D. (Kentucky)

Heaven, Timothy School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental
Sciences); Dental digital imaging, Use of computer in digital imaging
analysis

Hel, Zdenek College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor
(Microbiology, Pathology); HIV-1 pathogenesis and vaccine developent.
Design of novel strategies for immunotherapy of cancer

Hendricks, Peter School of Public Health
Department of Health Education and Health Promotion, Assistant
Professor, SOPH, Health Behavior

Hernandez, S. Robert School of Health
Professions

Department of Administration Health Services, Dr.P.H. (Professor
and Director) Doctoral Program in Administration-Health Services for
the School of Health Professions. Strategic Planning for Health Care
Organizations, Health Care Organization Theory, Human Resources
Management

**Herrett-Skjellum,
Jennifer** School of Engineering

Department of Information Engineering and Management, Instructor,
Information Engineering and Management; President, RunTime
Computing Solutions, LLC, 2009, B.A. (Humboldt State University),
M.A. (University of Wisconsin-Milwaukee), Communication, start-ups,
embedded systems technology

Herzig, Terrell W. School of Health
Professions

Department of Health Informatics, M.S.H.I., Credit Course Instructor
(Health Services Administration)

Hess, Annette School of Nursing
Assistant Professor of Nursing, 1984, B.S.N. (Auburn), M.S.N. (Troy
State), Ph.D. (UAB)

Hester, Donna J School of Education
Department of Human Studies, Associate Professor, Motor
Development, Physical Education Pedagogy

Hicks, Joan C. School of Health
Professions

Department of Health Informatics, M.S.H.I., Assistant Professor (Health
Services Administration)

Hickson, Mark III College of Arts and
Sciences

Department of Communication Studies, Professor of Communication
Studies, 1987, B.S., M.A. (Auburn), M.A. (Mississippi State), Ph.D.
(Southern Illinois)

Hiatt, Tee H. School of Health
Professions

Department of Administration Health Services, Professor Emeritus
(Health Services Administration); Health Care Computer Applications,
Data Processing in Health Care

- Higgins, N. Patrick** College of Joint Health Sciences
Department of Biochem and Molecular Genetics, Professor (Biochemistry and Molecular Genetics); DNA Topology, Genetic Transposition, DNA Enzymology
- Hill, Aubrey** College of Arts and Sciences
Department of Computer and Information Sciences, Research Assistant Professor of Computer and Information Sciences, 2000, M.S. (Mississippi State), M.S. (Jackson State), Ph.D. (UAB)
- Hill, Gail** School of Nursing
Associate Professor of Nursing, 1984, B.S. (Alabama), B.S.N., M.S. (Texas Woman's University), Ph.D. (UAB)
- Hilton, David** College of Arts and Sciences
Department of Physics, Associate Professor of Physics, 2007, B.S., M.S. (Rochester), M.S., Ph.D. (Cornell), Ultrafast spectroscopy and ultrashort pulse generations; ultrafast terahertz spectroscopy; correlated electron materials; superconductivity; high-magnetic field spectroscopy; magnetic semiconductors; complex functional nanomaterials; materials in extreme environments
- Hitchcock, Wilbur A.** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Professor of Civil, Construction and Environmental Engineering; Director of Construction Engineering Management Program, 2005, B.S. (U.S. Military Academy), M.E.C.E., Ph.D. (Texas AM), Engineering Online Education, Sustainable Structural Design Advances, Infrastructure Resilience
- Hites, Lisle** School of Public Health
Department of Health Care Organization and Policy, PhD, Assistant Professor
- Hodges, Ashley** School of Nursing
Assistant Professor of Nursing; Interim Assistant Dean for Graduate Clinical Programs, 2009, B.S.N. (Alabama), M.A. (Seton Hall), M.S.N., Ph.D. (UAB)
- Holcomb, Lygia** School of Nursing
Associate Professor of Nursing, 2006, B.S.N., M.S. (Missouri), D.S.N. (UAB)
- Hollingshead, Susan** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Mechanisms of Variation in Microbial Pathogenesis
- Holloway, Stacey** College of Arts Sciences
Department of Art Art History, Visiting Assistant Professor of Art, 2009, B.F.A (Purdue), M.F.A. (Minnesota-Twin Cities)
- Holmes, Robert E.** School of Health Professions
Department of Administration Health Services, Professor (Management); Business Education and Reform, Entrepreneurship, Strategic Management
- Holt, R. Lynn** School of Health Professions
Department of Genetic Counseling, MS, CGC, Program Director and Assistant Professor
- Hopkins, Maria** College of Arts and Sciences
Department of Psychology, Assistant Professor of Psychology, Director, Undergraduate Studies of Psychology, 2007, B.S., M.A., Ph.D. (UAB)
- Hosch, Ian E.** School of Engineering
Department of Civil Construction, and Environmental Engineering, Assistant Professor of Civil, Construction and Environmental Engineering, 2012, B.S.C.E., M.S.C.E, Ph.D. (UAB), Structural Engineering, Engineering Mechanics, Geotechnical Engineering
- Houser, Howard W.** School of Health Professions
Department of Administration Health Services, Professor Emeritus (Health Services Administration) History of Health Care Systems, General Administration, Comparative Health Systems
- Houser, Shannon** School of Health Professions
Department of Health Services Administration, Associate Professor of Health Information Management Program, 2004, Ph.D. (UAB)
- Houston, Thomas K.** School of Health Professions
Department of Health Informatics, II, M.D., Assistant Professor (Medicine, General/Internal)
- Howard, George** School of Public Health
Department of Biostatistics, DrPH (North Carolina), Professor. Design and Analysis of Multi-center Clinical Trials, Application of Statistical Methods in Epidemiological Studies, Linear Models.
- Howard, Virginia** School of Public Health
Department of Epidemiology, Professor (Epidemiology); Cardiovascular Disease Epidemiology, Stroke Epidemiology
- Hoyt, Ken** School of Engineering
Department of Biomedical Engineering, Assistant Professor (Radiology), Contrast-enhanced ultrasound imaging with a focus on the associated bioeffects, contrast agent targeting, and the potential for localized drug delivery
- Hsu, Hui-Chen** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Clinical Immunology, Rheumatology; The BXD2 autoimmune mouse model of lupus and erosive arthritis

- Hsu, Yung-Tsung** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences); Dental implants, Complete denture, Overdenture, Dental attachment
- Huang, Xuan** School of Business
Department of Management, Information Systems, and Quantitative Methods, Assistant Professor of Quantitative Methods, 2010, B.E. (Tsinghua University, Beijing), M.Sc., Ph.D. (Massachusetts, Amherst)
- Humber, Michael** School of Nursing
Assistant Professor (Nurse Anesthesia)
- Hunter, Gary R.** School of Education
Department of Human Studies, Professor of Physical Education, 1984, B.S. (Eastern Michigan), M.A., Ph.D. (Michigan State)
- Hurst, Christina B.** School of Health Professions
Department of Genetic Counseling, MS, CGC, Assistant Program Director and Assistant Professor
- Hurst, Douglas** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Instructor (Pathology); Chromatin regulation of metastasis
- Hutchings, John William** College of Arts and Sciences
Department of English, Professor of English, 1981, A.B. (Transylvania), M.A., Ph.D. (Kentucky)
- Hutson, Susan Perkins** School of Health Professions
Department of Clinical and Diagnostic Sciences, Associate Professor Emeritus, Respiratory Therapy Program, 1976, M.A.E. (UAB)
- Hyatt, Robert M.** College of Arts and Sciences
Department of Computer and Information Sciences, Associate Professor of Computer and Information Sciences, 1988, B.S., M.S. (Southern Mississippi), Ph.D. (UAB)
- Hyde, Russell** School of Engineering
Department of Information Engineering and Management, Instructor, Information Engineering and Management; Principal, Blaststone, LLC, 2011, BSEE, MSEE (UAB), P.E. (Alabama), Leadership, project management, building information modeling
- Ibelema, Minabere** College of Arts and Sciences
Department of Communication Studies, Associate Professor of Communication Studies, 1995, B.A. (Wilberforce), M.A., Ph.D. (Ohio State)
- Ideker, Raymond E.** School of Engineering
Department of Biomedical Engineering, Professor, Division of Cardiovascular Disease (Department of Medicine), Study of Cardiac Arrhythmia, Cardioversion and Electrical Ablation for Treatment of Arrhythmia
- Iles, Karen** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Anesthesiology)
- Irvin, M. Ryan** School of Public Health
Department of Epidemiology, Assistant Professor (Epidemiology); Genetic Epidemiology of Cardiometabolic Diseases; Pharmacogenetics
- Ivey, Jean** School of Nursing
Associate Professor of Nursing, 2002, B.S.N. (UAB), M.S.N. (Texas at Galveston), D.S.N. (UAB)
- Jablonski, Rita S.** School of Nursing
Associate Professor of Nursing, 2012, B.S.N. (Holy Family), M.S.N. (La Salle), Ph.D. (Virginia)
- Jack, Eric** School of Business
Department of Management, Information Systems and Quantitative Methods, Associate Professor of Management; Dean, Faculty Development and Research, 2001, B.S. (Georgia Institute of Technology), M.B.A. (Wright State), Ph.D. (Cincinnati)
- Jackson, Janice** School of Dentistry
Department of Clinical Dentistry, Professor (Pediatric Dentistry): Clinical pediatric dentistry, pulp therapy, childhood caries, childhood obesity
- Jannett, Thomas C.** School of Engineering
Department of Electrical and Computer Engineering, Professor of Electrical and Computer Engineering, 1984, B.S.E., M.S.E. (UAB), Ph.D. (Auburn), Sensor Networks, Biomedical Instrumentation and Control Systems
- Janowski, Gregg M.** School of Engineering
Department of Materials Science and Engineering, Professor of Materials Science and Engineering; Associate Provost for Assessment and Accreditation, 1990, B.S., M.S., Ph.D. (Michigan Technological), X-Ray Diffraction, Composite Materials, Physical Metallurgy, Structure-Processing-Property Relationships
- Javed, Amjad** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology, Pathology), Genetic and molecular signaling for cellular differentiation and skeletogenesis
- Javed, Amjad** School of Dentistry
Department of Clinical Dentistry, Professor (Oral and Maxillofacial Surgery); Bone, teeth, cartilage development and remodeling, Adipogenesis, Gene knock-out models, Transcriptional regulation of skeletal cell differentiation
- Jefferson, Robert F.** College of Arts and Sciences
Department of History, Associate Professor of History, 2010, B.A. (Elon College), M.A. (Old Dominion), Ph.D. (Michigan)
- Jenkins, David T.** College of Arts and Sciences

Department of Biology, Associate Professor of Biology, 1974, B.S., Ph.D. (Tennessee); Research Interest: Mycology, Microbiology

Jenkins, Gavin School of Health Professions

Department of Rehabilitation Sciences, Assistant Professor (Occupational Therapy) , Ph.D., OTR/L, Assistive Technology and the Built Environment

Jennings, Patricia R. School of Health Professions

Department of Surgical Physican Assistant Studies, Professor; Infectious Diseases.

Jepkemboi, Grace School of Education
Department of Curriculum and Instruction, Assistant Professor of Early Childhood and Elementary Education, 2008, B.Ed. (Egerton University, Kenya), M.A. (Moi University, Kenya), Ph.D. (UAB)

Jezewski, Peter School of Dentistry

Department of Clinical Dentistry, Assistant Professor (Periodontics); Inherited component of craniofacial disorders, syndromic clefting disorders, periodontitis, zebrafish model

Jhala, Nirag College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pathology); Characterizing utility of endoscopic ultrasound guided fine needle aspiration cytology. Characterizing expression of molecular pathways involved in the development and progression of pancreatic, colorectal adenocarcinoma, hepatocellular carcinoma and cholangiocarcinoma

Jiao, Kai College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Genetics); Hypothalamic Control of Feeding Behavior

Johnson, Margaret College of Arts and Sciences

Department of Chemistry, Assistant Professor of Chemistry, 2013, B.S., Ph.D. (Simon Fraser)

Johnston, Allen School of Business

Department of Management, Information Systems, and Quantitative Methods , Associate Professor of Information Systems, Director of Information Systems Programs, 2007, B.S. (LSU), M.B.A., PhD. (Mississippi)

Johnstone, John K. College of Arts and Sciences

Department of Computer and Information Sciences, Associate Professor of Computer and Information Sciences, 1994, B.S. (Saskatchewan-Canada), M.S., Ph.D. (Cornell)

Jolly, Pauline School of Public Health

Department of Epidemiology, Professor (Epidemiology); Infectious Disease Epidemiology, International Health and Global Studies

Jones, Harold P. School of Health Professions

Professor and Dean, School of Health Professions, 2001, Ph.D. (Duke)

Jones, Warren T. College of Arts and Sciences

Department of Computer and Information Sciences, Professor Emeritus of Computer and Information Sciences, 1979, B.S.E.E. (Georgia Institute of Technology), M.S. (Georgia State), M.S., Ph.D. (Georgia Institute of Technology), P.E. (Kentucky)

Judd, Suzanne E. School of Public Health

Department of Biostatistics, Ph.D. (Emory), Assistant Professor. Vitamin D, Longitudinal Cohort Studies, Cystic Fibrosis and Bone Health, Data Management.

Jukkala, Angela School of Nursing

Associate Professor of Nursing, 2006, B.S.N. (Bemidji State), M.S., Ph.D. (Minnesota)

Jun, Ho-Wook School of Engineering

Department of Biomedical Engineering, Associate Professor of Biomedical Engineering, 2006, BS, MS (Hanyang University, South Korea), Ph.D. (Rice), Biomimetic nanotechnology, Biomaterials, Tissue engineering

Jung, Paul College of Arts and Sciences

Department of Mathematics, Assistant Professor of Mathematics, 2011, Ph.D. (University of California System: Los Angeles), Probability Theory and Statistical Mechanics

Justement, Louis B. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Lymphocyte signaling

Kabagambe, Edmond Kato School of Public Health

Department of Epidemiology, Associate Professor (Epidemiology); Nutritional Epidemiology, Chronic Disease Epidemiology

Kabarowski, Janusz College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor; bio-active lipids and inflammation

Kadisha, Inga College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Cell Biology

Kamii, Constance School of Education

Department of Curriculum and Instruction, Professor (Early Childhood Education); Early Childhood Education and Theory of Jean Piaget

Kana, Rajesh K. College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology, 2007, B.S. (Calicut), M.A. (Annamalai), Ph.D. (Indian Institute of Technology)

- Kapp, Judith A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; ocular immunology, autoimmune disease
- Kappes, John** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor
- Karpeshina, Yulia** College of Arts and Sciences
Department of Mathematics, Professor of Mathematics, 1995, M.S., Ph.D. (Saint Petersburg, Russia), Partial Differential Equations and Mathematics Physics
- Kaslow, Richard** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Professor; Epidemiology of Infection and Immunity
- Katholi, Charles R.** School of Public Health
Department of Biostatistics, Ph.D. (Adelphi), Professor Emeritus. Computationally Intensive Statistical Methods, Large Sample Theory, Use of Asymptotic Tests in the Presence of Small Samples, Estimation and Testing Infection Potential by Pool Screening.
- Katiyar, Santosh** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Dermatology); Prevention of skin cancer by dietary antioxidants
- Katra, Rodolphe P.** School of Engineering
Department of Biomedical Engineering, Adjunct Assistant Professor, 2012, B.S.B.M.E. (Louisiana Tech), M.S.B.M.E. (Case Western Reserve), M.B.A. (Minnesota), Ph.D. (Case Western Reserve), Remote disease monitoring and prediction, Cardiac electrophysiology
- Katz, Jannet** School of Dentistry
Department of Clinical Dentistry, Professor (Pediatric Dentistry); Periodontal Disease, Porphyromonas gingivalis, Hag B, T-Helper Cells, Immune Response, Cytokines
- Kau, Chung K.** School of Dentistry
Department of Clinical Dentistry, Professor (Orthodontics); Three dimensional facial imaging and modeling
- Kawai, Ryoichi** College of Arts and Sciences
Department of Physics, Associate Professor of Physics, 1991, B.S., M.S., Ph.D. (Waseda, Japan), Condensed-matter theory; biophysics theory; materials physics theory; computational physics; open quantum systems
- Kearney, John F.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; B cell development
- Kedishvili, Natalia** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics); Regulation of intracellular levels of bioactive retinoids and steroids in human tissues in health and disease
- Keitt, Andrew W.** College of Arts and Sciences
Department of History, Associate Professor of History, 1999, B.A. (Duke), M.A., Ph.D. (UC-Berkeley)
- Keltner, Norman** School of Nursing
Professor of Nursing, 1990, B.S.N., M.S.N. (Fresno State), Ed.D. (San Francisco)
- Kempf, Mirjam** School of Nursing
Associate Professor of Nursing, 2010, M.P.H., (UAB), Ph.D. (Institute for Medical Microbiology and Hygiene, Julius-Maximilians-Universitat)
- Kennedy, Jacqueline W.** School of Health Professions
Department of Health Informatics, Adjunct Professor (Health Services Administration)
- Kennedy, Karen** School of Business
Department of Marketing, Industrial Distribution and Economics, Associate Professor of Marketing and Industrial Distribution; Senior Associate Dean, Programs and Outreach, 2001, B.S. (Blue Mountain), M.S. (Florida State), M.B.A. (Georgia State), Ph.D. (South Florida)
- Kennedy, Karen** School of Health Professions
Department of Administration Health Services, Associate Professor (Marketing); Cognitive Research, Diversity, Services Marketing, Organizational Culture, Interpersonal Trust Development, Qualitative Research Methods
- Kennedy, Richard** School of Public Health
Department of Biostatistics, Ph.D. (Virginia Commonwealth University), Assistant Professor. Longitudinal data modeling, cognitive function, clinical trials simulations, gene expression analysis.
- Kerley, Kent** College of Arts and Sciences
Department of Justice Sciences, Associate Professor and Honors Program Director, 2005, B.A. (East Tennessee State), M.A., Ph.D. (Tennessee), Corrections, Religion Cybercrime, Policy
- Kerman, Ilan** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Psych-Behavioral Neurobiology
- Kesterson, Robert A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Hypothalamic Control of Feeding Behavior

- Key, Susan** School of Business
Department of Management, Information Systems, and Quantitative Methods, Associate Professor of Management, 1995, B.A., J.D., M.B.A. (Illinois), Ph.D. (Pittsburgh)
- Keyser, Kent T.** School of Optometry
Department of Vision Sciences, Professor (Vision Sciences), Neurotransmitters and receptors
- Kharlampieva, Eugenia** College of Arts and Sciences
Department of Chemistry, Assistant Professor of Chemistry, 2010, B.S. (ChelyabinskSt.), Ph.D. (Stevens Institute of Technology)
- Kiessling III, Edward H.** School of Engineering
Department of Engineering, MSME, MSISE, MSEE, PE, Adjunct Professor; Manager, Safety, Quality, and Management Services, Marshall Space Flight Center – NASA
- Kilgo, Jennifer L.** School of Education
Department of Curriculum and Instruction, Professor of Special Education, 1995, B.A. (Auburn), M.A.Ed. (UAB), Ed.D. (Alabama)
- Kilgore, Meredith** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor and Chair
- Kim, Helen** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Biochemistry Molecular Genetics, Neurobiology, Pharmacology Toxicology); Proteomics of neuroprotective and chemopreventive actions of dietary phytochemicals
- Kim, Hyunki** School of Engineering
Department of Biomedical Engineering, Assistant Professor (Radiology), Breast, pancreatic, and brain cancer imaging
- Kim, Jeonga** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor, Medicine; Cross-talk between inflammation and insulin signaling
- Kim, Jong-Eun** School of Engineering
Department of Mechanical Engineering, Research Associate Professor of Mechanical Engineering, 2003, B.S., M.S., (Hanyang University, South Korea), Ph.D. (California, Davis), Computational Injury Biomechanics; Fluid Structure Interaction; Multidisciplinary Design Optimization
- Kimberly, Robert** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Professor; Autoimmunity, Molecular Mechanisms and Genetic Risk
- Kinderknecht, Keith** School of Dentistry
Department of Clinical Dentistry, Professor (Prosthodontics); Axiography, mandibular movement, temporomandibular disorders
- King, Gwendalyn** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurobiology; Understanding the difference between pathological and non-pathological brain aging
- King, Jennifer** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Pharmacology and Toxicology); pharmacokinetics and pharmacogenetics; multicenter clinical trials designed to assess the absorption and disposition of antiviral and antiretroviral drugs
- King, Jerry** School of Health Professions
Department of Clinical and Diagnostic Sciences, Assistant Professor, Respiratory Therapy Program, 2008, M.S. (UAB)
- King, Peter** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Physiology Biophysics); Mechanisms of Growth Factor mRNA Stabilization in Cancer
- Kirby, Jason** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Associate Professor of Civil, Construction and Environmental Engineering, 2005, B.S. (Auburn), M.S., Ph.D. (Alabama), Environmental Engineering, Water Resources, Hydraulics
- Kirk, Kevin** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Physiology and Biophysics; The CFTR Chloride Channel
- Kirkland, Lynn** School of Education
Department of Curriculum and Instruction, Professor of Early Childhood and Elementary Education, 1998, B.S., M.A.Ed., Ed.S. (UAB), Ed.D. (Alabama)
- Kitchin, Elizabeth** School of Health Professions
Health Focused Patient/Client Management for Physical and Occupational Therapists, PhD, RD, Assistant Professor of Nutrition Sciences
- Klapow, Jashua C.** School of Health Professions
Department of Administration Health Services, Assistant Professor (Health Care Organization and Policy); Outcome Evaluation, Health Related Quality of Life, Health Care Delivery Systems, Behavioral Medicine, Chronic Illness, Provider Behavior
- Kleinstein, Robert N.** School of Optometry
Department of Vision Sciences, Professor (Optometry)
- Klug, Christopher** College of Joint Health Sciences

Department of Biochem and Molecular Genetics, Associate Professor (Biochemistry Molecular Genetics, Genetics, Medicine Microbiology, Pathology); Hematopoietic Stem Cell Biology and Acute Leukemias

Knight, David C. College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology, 2007, B.S. (Truman State), M.S., Ph.D. (Wisconsin-Milwaukee)

Knowles, Cheryl J. School of Health Professions

Department of Physical Therapy, Associate Professor Emerita (Physical Therapy); Cardiopulmonary Physical Therapy

Knowles, Ian W. College of Arts and Sciences

Department of Mathematics, Professor of Mathematics, 1979, B.Sc. (Adelaide), M.Sc., Ph.D. (Flinders-South Australia), Ordinary and Partial Differential Equations, Numerical Analysis

Kohler, Connie School of Public Health

Department of Health Education and Health Promotion, Professor, SOPH, Health Behavior

Kohler, Maxie P. School of Education

Department of Human Studies, Professor of Educational Psychology and Research, 1991, B.S. (Univ. Miss. for Women), M.S., Ph.D. (Mississippi State)

Koomullil, Roy P. School of Engineering

Department of Mechanical Engineering, Associate Professor of Mechanical Engineering, 2002, B.S. (Mahatma Gandhi University, India), M.S. (Indian Institute of Technology, India), Ph.D. (Mississippi State), High Performance Computing; Six Degrees of Freedom Simulation; Bio-medical Flow Modeling

Korf, Bruce College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor and Chair (Genetics); Neurofibromatosis Type 1

Kraft, Timothy W. School of Optometry

Department of Vision Sciences, Assistant Professor (Vision Sciences)

Krannich, Larry K. College of Arts and Sciences

Department of Chemistry, Professor Emeritus of Chemistry, 1969, B.S., M.S. (Illinois State), Ph.D. (Florida)

Krishna, N. Rama College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Biochemistry and Molecular Genetics); NMR of Biomolecules, Molecular Endocrinology of Peptide Hormones

Ku, David D. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pharmacology and Toxicology, Cardiovascular Disease); Cardiovascular and Coronary Pharmacology; Role of Thrombin, Endothelium, and Platelets in Coronary Vasospasm and Ischemic Heart Disease

Kubagawa, Hiromi College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Immunopathology

Kucik, Dennis F. School of Engineering
Department of Biomedical Engineering, Associate Professor (Pathology), Cell adhesion and motility

Kulczycki, Andrezej School of Public Health
Department of Health Care Organization and Policy, PhD, Associate Professor

Kwak, Sunjoo College of Arts and Sciences

Department of Public Administration, Assistant Professor (Government), 2002, B.A., M.P.A. (Hankuk Univ), Ph.D. (Rutgers), Public budgeting and finance, strategic planning, state and local government administration, administration theory and behavior.

Kyle, Chris College of Arts and Sciences

Department of Anthropology, Associate Professor of Anthropology; Interim Chair, 2000, B.A. (Ft. Lewis College), M.A., M.Phil., Ph.D. (Columbia)

Lahti, Adrienne College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D.; Professor; Psych – Behavioral Neurobiology, Use of multimodal brain imaging techniques to study the neuropathology of schizophrenia and bipolar disorder and to evaluate the effects of psychotropic drugs on brain function and biochemistry; translational work aiming at bridging human brain imaging and postmortem studies

Lake, Lauren College of Arts and Sciences

Department of Art Art History, Associate Professor of Art: Chair, 1996, BA (University of Florida), M.F.A. (Madison-Wisconsin)

Laken, Debra E. School of Health Professions

Department of Clinical and Diagnostic Sciences, Associate Professor, Respiratory Therapy Program, 1999, M.A.E. (UAB)

Lalor, Melinda M. School of Engineering
Department of Civil, Construction and Environmental Engineering, Professor of Civil, Construction and Environmental Engineering; Interim Dean, School of Engineering, 1989, B.S. (Birmingham-Southern), M.S.C.E. (UAB), Ph.D. (Vanderbilt), Environmental Engineering, Water Resources, Solid Waste Management

Lancaster, Jack College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Anesthesiology; The Biophysics and Biochemistry of Nitric Oxide

Landar, Aimee College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor
(Pathology); Cellular effects of post-translational modification of protein
thiols by reactive species in cancer and cardiovascular disease

Landry, Amy Y. School of Health
Professions

Department of Health Administration, Assistant Professor (Health
Services Administration), Leadership, Strategic Management of
Healthcare Organizations, Management Training and Development,
Marketing

Lanzi, Robin Gaines School of Public Health

Department of Health Education and Health Promotion, Associate
Professor, SOPH Health Behavior

Larson, Keri School of Business

Department of Management, Information Systems, and Quantitative
Methods, Assistant Professor (Management, Information Systems and
Quantitative Methods), 2012, A.B. (Chicago), Ph.D. (Georgia), Data
Management, Intro to Information Systems, and Social Media and Virtual
Communities

**Lawson, Christopher
M.** College of Arts and
Sciences

Department of Physics, Professor of Physics, 1993, B.S. (Oklahoma
State), M.S. (Colorado), Ph.D. (Oklahoma State), Nonlinear optics; fiber
optics; optical sensors; optical coherence imaging tomography; laser
spectroscopy

Lee, Seung-Dong School of Business

Department of Marketing, Industrial Distribution, Economics, Professor of
Economics, 1979, B.A., M.A. (Korea), M.A., Ph.D. (Southern Methodist)

Lefkowitz, Elliot J. College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Associate
Professor (Microbiology); Microbial Genomics, Viral Evolution,
Bioinformatics, and Biodefense

Lein, Donald School of Health
Professions

Health Focused Patient/Client Management for Physical and
Occupational Therapists, PT, PhD, Assistant Professor of Physical
Therapy

Lemons, Jack E. School of Dentistry

Department of Clinical Dentistry, Professor (Prosthodontics),
Biocompatibility

Lemons, Jack E. School of Engineering

Department of Biomedical Engineering, Professor of Biomaterials;
Professor of Surgery; Division Director, Orthopaedic Laboratory
Research; Professor of Biomedical and Materials Engineering, 1968,
Ph.D. (Florida), Biocompatibility profiles of surgical implant devices
with an emphasis on the role(s) of element and/or force transfers along
biomaterial-to-tissue interfaces

Lesort, Mathieu College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate
Professor; Psychiatry; Pathogenesis of Huntington's Disease: from
models to therapeutic targets

Lester, Robin A.J. School of Optometry
Department of Vision Sciences, Professor (Neurobiology)

Levitan, Emily B. School of Public Health

Department of Epidemiology, Assistant Professor (Epidemiology);
Comparative Effectiveness Research, Cardiovascular Epidemiology,
Epidemiologic Methods

Lewis, Roger T. College of Arts and
Sciences

Department of Mathematics, Professor Emeritus of Mathematics,
1975, A.B. (Tennessee), M.S. (Florida Institute of Technology), Ph.D.
(Tennessee), Differential Equations, Spectral Theory

Lewis, Terri School of Public Health

Department of Health Education and Health Promotion, Assistant
Professor, SOPH, Health Behavior

Li, JunFang College of Arts and
Sciences

Department of Mathematics, Associate Professor of Mathematics, 2008,
B.A. (Wuhan Univ., China), Ph.D. (Oklahoma), Geometric Analysis and
Non-linear Partial Differential Equations

Li, Ling College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Genetics Medicine
Neurobiology Pathology Connections Between Atherosclerosis,
Diabetes, and Alzheimer's Disease

Li, Xiaohua College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D.,
Associate Professor; Psychiatry Behavioral Neurobiology; Neurobiology
of mood disorders

Li, Yi-Ping College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Professor
(Pathology); Understanding the mechanisms of bone formation, bone
resorption, skeletal development, craniofacial development and cancer
bone metastasis; Developing effective new therapies for treating and
preventing the related diseases.

- Li, Yonghe** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D.; Medicine
- Li, Yuqing** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Neurobiology Pathophysiology and experimental therapeutics of dystonia and related movement disorders. Basal ganglia function and dysfunction. Molecular and cellular mechanism of learning and synaptic plasticity
- Liber, George O.** College of Arts and Sciences
Department of History, Professor of History, 1987, B.A. (Indiana), M.A. (Harvard), Ph.D. (Columbia)
- Lim, Hyeyoung** College of Arts and Sciences
Department of Justice Sciences, Assistant Professor of Justice Sciences, 2013, Ph.D. (Sam Houston State), Police Use of Force, Police Decision Making, Quantitative Methods, Program and Policy Evaluation
- Limdi, Nita A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Neurology)
- Lin, Fang-Tsyur** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology); Mechanisms of the LPA Receptor Actions Robin Lorenz, Professor (Microbiology, Pathology): Cellular and Molecular Immunology of the Gastrointestinal Tract
- Lin, Weei-Chin** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology); Regulation of Cell Growth by G Protein-Coupled Receptor Signaling
- Lingasubramanian, Karthikeyan** School of Engineering
Department of Electrical and Computer Engineering, Assistant Professor of Electrical and Computer Engineering, 2011, Ph.D. (South Florida), Hardware Security, Reliability and Low Power Design for Digital VLSI Circuits and Systems
- Linney, Jean Ann** College of Arts and Sciences
Department of Psychology, Professor (Psychology); Community Psychology, Human Ecology, Prevention Science
- Linville, Jason G.** College of Arts and Sciences
Department of Justice Sciences, Teaching Assistant Professor and Director, Master of Science in Forensic Science Program, 2004, B.S. (Ohio), M.S., Ph.D. (UAB), Forensic Biology, Entomology, Forensic Science Education
- Litaker, Mark** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences): Dental epidemiology, Research methods, Biostatistics
- Littlefield, David L.** School of Engineering
Department of Mechanical Engineering, Professor of Mechanical Engineering, 2005, B.S., M.S., Ph.D. (Georgia Tech), Computational Mechanics; Impact Mechanics and Shock Physics; Weapons Effects
- Liu, Lei** School of Optometry
Department of Vision Sciences, Associate Professor (Optometry), Low vision visual function and rehabilitation
- Liu, Nianjun** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; genetic linkage and association analysis, disequilibrium mapping, population genetics, bioinformatics, machine learning methods and longitudinal data analysis and their applications in genetics and bioinformatics
- Liu, Perng-Ru** School of Dentistry
Department of Clinical Dentistry, Professor (Prosthodontics); Dental CAD-CAM, Esthetic, Dental implant restorations
- Liu, Rui-Ming** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Rui-Ming
- Loder-Jackson, Tondra** School of Education
Department of Human Studies, Associate Professor of Foundations of Education, 2003, B.S. (Birmingham-Southern), M.P.P. (Chicago), Ph.D. (Northwestern)
- Loop, Michael** School of Optometry
Department of Vision Sciences, Associate Professor (Vision Sciences)
- Lopez, Richard D.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; gamma/delta T cells
- Lorenz, Robinna G.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Mucosal immunology
- Lothrop, Clinton D.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Biochemistry and Molecular Genetics)
- Lou, Xiang-Yang** School of Public Health
Department of Biostatistics, Ph.D. (Zhejiang), Associate Professor. Linkage and Association Analysis, Disequilibrium Mapping, Population Genetics, Bioinformatics, Machine Learning Methods and Longitudinal Data Analysis and Their Applications in Genetics and Bioinformatics.

- Louis, Patrick J.** School of Dentistry
Department of Clinical Dentistry, Professor (Oral and Maxillofacial Surgery); Maxillofacial reconstruction, Dental implantology, Dentoalveolar surgery, Temporomandibular joint therapy
- Lowman, John** School of Health Professions
Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Cardiopulmonary Physical Therapy
- Lubin, Farah** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurobiology; Molecular Transcriptional Mechanisms in Learning/Memory and Neurological Disorders
- Lucius, Aaron L.** College of Arts and Sciences
Department of Chemistry, Assistant Professor of Chemistry, 2006, B.S. (Oregon State), Ph.D. (Washington U.)
- Lungu, Claudiu T.** School of Public Health
Department of Environmental Health Sciences, Ph.D., Associate Professor and Interim Director Deep South Center for Occupational Health and Safety , Evaluation of adsorption characteristics of granular activated carbon and activated carbon fibers used in respiratory protection and protective clothing; Measurement and evaluation of VOC exposure in various workplaces; VOC emissions from building materials; Exposure to ionizing radiation.
- Luo, Ming** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Structure-based approaches to anti-infectious agents
- Ma, Jin-Biao** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics)
- MacDougall, Mary** School of Engineering
Department of Biomedical Engineering, Professor and Associate Dean for Research (Oral and Maxillofacial Surgery), Genetic dental diseases, Tooth development, Mineralized matrix, Gene regulation
- Maday, Kristopher** School of Health Professions
Department of Surgical Physican Assistant Studies, Assistant Professor; Trauma
- Madden, Kerry** College of Arts and Sciences
Department of English, Associate Professor of English, 2009, B.A. (Tennessee), M.F.A. (Tennessee)
- Makhija, Sonia K.** School of Dentistry
Department of Clinical Dentistry, Assistant Professor (General Dental Sciences); Early Occlusal Caries, Geriatric Dentistry, Preventive Dentistry, Evidence-Based Dentistry
- Manne, Upender** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Anatomic Pathology)
- Manning, Maryann M.** School of Education
Department of Curriculum and Instruction, Professor Emerita (Elementary Education); Reading and Language Arts, Individualization of Instruction, Creative Teaching
- Mannon, Roslyn** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Medicine); Translational Approaches to the Pathogenesis and Treatment of Chronic Graft Injury
- Maples, Elizabeth H.** School of Public Health
Department of Environmental Health Sciences, Ph.D., M.P.H., Assistant Professor and Deputy Director, Deep South Center for Occupational Health and Safety , Reduction of work-related injuries and illnesses through effective training programs, designing, implementing and evaluating occupational health and safety training programs. Also interested in expanding the capacity of environmental public health practitioners in working within communities to address environmental health problems, specifically noise pollution
- March, Joe L.** College of Arts and Sciences
Department of Chemistry, Associate Professor of Chemistry; Associate Director, Science and Technology Honors Program, 1999, B.S., M.S. (Southwestern Texas), Ph.D. (Texas)
- Marion, Ken R.** College of Arts and Sciences
Department of Biology, Professor Emeritus of Biology, 1971, B.A., Ph.D. (Washington University, St. Louis), Animal Natural History and Aquatic Environmental Biology
- Markert, James** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Cell Biology, Physiology Biophysics); Engineering Herpes Simplex Viruses for the Therapy of Cancer
- Marstrander, Jon** School of Engineering
Department of Electrical and Computer Engineering, Instructor of Electrical and Computer Engineering, 2005, B.S.E.E., M.S.E.E. (UAB), P.E. (Alabama), Signal and Image Processing, Embedded Systems, and Field Programmable Gate Arrays
- Martin, James C.** College of Arts and Sciences
Department of Physics, Professor Emeritus of Physics, 1980, B.S. (Florida State), Ph.D. (Georgia Tech), Physics and science Education
- Martin, Kathleen** School of Education
Department of Curriculum and Instruction, Associate Professor Emerita (Early Childhood Education); Reading, Child Development, Reading Recovery

- Martin, Warren S.** School of Health Professions
Department of Administration Health Services, Professor (Marketing); Survey Research, Marketing Strategy, Professional Sales Strategy, Decision Making
- Matalon, Sadis** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; reactive oxygen and nitrogen species
- Matteo, Dan** College of Arts and Sciences
Department of Forensic Sciences, Adjunct Faculty; Forensic Drug Chemistry
- Mayer, John C.** College of Arts and Sciences
Department of Mathematics, Professor of Mathematics; Associate Chair, Department of Mathematics, 1984, B.A. (Randolph-Macon), M.A., Ph.D. (Florida), Topology, Continuum Theory, Dynamical Systems, Mathematics Education
- Mazer-Gurmendi, Raquel** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences); Dental Materials, Composite Resins, Adhesives, Clinical investigation, Physical and mechanical testing
- McCarthy, John** School of Health Professions
Health Focused Patient/Client Management for Physical and Occupational Therapists, PT, PhD, Associate Professor of Physical Therapy
- McCarty, Karen** School of Nursing
Assistant Professor of Nursing, 2004, B.S.N., M.P.H. (UAB), M.S.N. (Florida), Ph.D. (Central Florida)
- McClintock, James B.** College of Arts and Sciences
Department of Biology, Endowed University Professor, 1987, B.S. (California), M.S., Ph.D. (South Florida), Polar and Marine Biology
- McClure, Craig P.** College of Arts and Sciences
Department of Chemistry, Associate Professor of Chemistry, 2005, B.A. (Northern Iowa), M.S., Ph.D. (Michigan)
- McClure, Leslie Ain** School of Public Health
Department of Biostatistics, Ph.D. (Michigan), Associate Professor and Director of Graduate Studies.# Clinical Trials with Multiple Outcomes, Interim Analysis.
- McComiskey, Bruce** College of Arts and Sciences
Department of English, Professor of English, 1998, B.A., M.A. (Illinois State), Ph.D. (Purdue)
- McConnell, Michael N.** College of Arts and Sciences
Department of History, Associate Professor Emeritus of History, 1985, B.A. (Indiana of Pennsylvania), M.A. (Youngstown), Ph.D. (William and Mary)
- McCormick, Lisa** School of Public Health
Department of Health Care Organization and Policy, DrPH, Assistant Professor
- McCracken, Michael** School of Dentistry
Department of Clinical Dentistry, Professor (General Dental Sciences), Dental implants, Biomimetic materials, Growth factors
- McCurry, Valley** School of Health Professions
Department of Occupational Therapy, Assistant Professor, OTR/L, MBA
- McDaniel, David R.** School of Engineering
Department of Mechanical Engineering, Research Associate Professor of Mechanical Engineering, 2008, B.S. (US Air Force Academy), M.S. (George Washington University), Ph.D. (Colorado, Colorado Springs), High Performance Computing; Computational Fluid Dynamics; Multidisciplinary Air Vehicle Simulation
- McDevitt, Michael E.** School of Health Professions
Department of Health Informatics, Adjunct Professor (Health Services Administration)
- McDougall, Mary** School of Dentistry
Department of Clinical Dentistry, Professor (Oral and Maxillofacial Surgery): Genetic dental diseases, tooth development, mineralized matrix, gene regulation
- McFarland, Carl E. Jr.** College of Arts and Sciences
Department of Psychology, Professor of Psychology, Co-Director, Undergraduate Neuroscience Program, 1975, B.A., M.S., Ph.D. (Kansas)
- McGhee, Tomeka W.** School of Education
Department of Human Studies, Associate Professor of Counselor Education, Foundations; Urban Education, Education and Birmingham Civil Rights Movement; African American Education, Life History of Educators, Home-School Relation
- McGrath, Shelly L.** College of Arts and Sciences
Department of Justice Sciences, Assistant Professor of Justice Sciences, 2008, B.S. (St. Mary's), M.S. (Ball State), Ph.D. (Southern Illinois), Quantitative Methods, Crime Mapping, Violence
- McGuinness, Teena** School of Nursing
Professor of Nursing; Interim Chair Community Health, Outcomes and Systems, 2007, B.S.N. (Old Dominion), M.S. (Virginia Commonwealth), Ph.D. (Pittsburgh)
- McGwin, Gerald** School of Public Health
Department of Epidemiology, Professor and Vice Chair (Epidemiology); Injury Epidemiology, Ophthalmic Epidemiology; Epidemiologic Methods

- McKnight, Andrew** School of Education
Department of Human Studies , Associate Professor of Foundations of Education, 2003, B.A. (Virginia Commonwealth), M.A.Ed. (William Mary), Ph.D. (North Carolina at Greensboro)
- McLain, Rhonda** School of Nursing
Assistant Professor of Nursing; Assistant Dean for Undergraduate and Prelicensure Programs, 2005, B.S.N. (College of Mt. St. Joseph), M.N. (Emory), D.S.N. (UAB)
- McMahon, Lori** School of Optometry
Department of Vision Sciences, Professor (Cell, Developmental Integrative Biology)
- McNees, Patrick** School of Nursing
Professor (Nursing); Community Health Outcomes Systems
- McNeese, Rose** School of Education
Department of Human Studies, Associate Professor of Educational Leadership, 2013, B.S. (Southern Mississippi); Ed. Specialist, Ph.D. (Georgia State)
- McNicholas, Carmel** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Instructor (Physiology and Biophysics); Structure-Function and Regulation of Ion Channels of the Renal and Cardiovascular System
- McPherson, Heather A.** College of Arts and Sciences
Department of Art History, Professor of Art History, 1982, B.A. (Oregon), M.A. (Sorbonne), Ph.D. (Washington)
- McWilliams, Tennant S.** College of Arts and Sciences
Department of History, Professor (History) and Dean Emeritus; Recent South, Modern United States, U.S. Foreign Affairs
- Meadows, Lee** School of Education
Department of Curriculum and Instruction, Associate Professor of High School Education, 1993, B.A. (Mississippi), M.A.Ed. (Texas), Ph.D. (Georgia)
- Meakin, Robert** School of Engineering
Department of Mechanical Engineering, Professor of Mechanical Engineering, 2007, B.S. (Brigham Young), M.S., Ph.D. (Stanford), Software Engineering for Multi-Disciplinary, Physics-Based Simulation Capability Development; Computational Geometry; Aerodynamics of Multiple-Bodies in Proximate Flight
- Melaney-Bodden, Erin** College of Arts and Sciences
Department of Public Administration, MPA. Development Director, Girls Inc. of Central Alabama: Fundraising and marketing.
- Melendez-Ferro, Miguel** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Cell Biology
- Menachemi, Nir** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor
- Meneer, Kristi S.** School of Education
Department of Human Studies , Associate Professor of Physical Education, 2001, B.A. (Louisiana), M.A., Ph.D. (New Orleans)
- Mennemeyer, Stephen T.** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor
- Menses, Karen** School of Nursing
Professor of Nursing; Associate Dean of Research, 2007, B.S. (Georgetown), M.S., Ph.D. (Boston College)
- Merritt, Stephen** College of Arts and Sciences
Department of Anthropology, Assistant Professor of Anthropology, 2013, B.S., M.A., Ph.D. (Rutgers)
- Messiaen, Ludwine** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Molecular genetics testing in hereditary disorders; molecular dissection of the variant forms of NF1
- Messina, Frank M.** School of Business
Department of Accounting and Finance, Professor of Accounting, 1993, B.S. (Livingston), M.Acc., Ph.D. (Mississippi State), C.P.A.
- Messina, Joseph** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Insulin and Growth Hormone (GH) Action, Insulin and GH Resistance Following Trauma and Infection
- Messina, Joseph L.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Pathology; Insulin and Growth Hormone (GH) Action, Insulin and GH Resistance Following Trauma and Infection
- Mestecky, Jiri** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Mucosal immunology
- Michael III, Max** School of Public Health
Department of Health Care Organization and Policy, MD, Professor and Dean
- Michalek, Suzanne M.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Mucosal immunology
- Milby, Jesse B.** College of Arts and Sciences

Department of Psychology, Professor Emeritus (Psychology); Clinical Psychology, Medical Psychology, Behavior Therapy, Addiction Treatment Outcome

Millard, Andre J. College of Arts and Sciences

Department of History, Professor of History, 1989, B.A. (Nottingham-England), M.A. (Mississippi), Ph.D. (Emory)

Miller, Brianna School of Health Professions

Department of Clinical and Diagnostic Sciences, Assistant Professor, M.S.

Miller, Jeffery School of Health Professions

Department of Clinical and Diagnostic Sciences, Teacher

Miller, Kenneth School of Business

Department of Marketing, Industrial Distribution, Economics, Instructor of Marketing and Industrial Distribution; Executive Director, MBA Programs, 2008, B.S. (Auburn), M.B.A. (Golden Gate), Ed.D. (Vanderbilt)

Miller, Michael A. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology); Function and evolution of intercellular communication mechanisms

Miller, Stephen J. College of Arts and Sciences

Department of History, Associate Professor of History, 2001, B.A. (Wisconsin-Madison), M.A., Ph.D., (UCLA)

Miller, Susan School of Health Professions

Department of Nutrition Sciences, MS, RD, LD Assistant Professor; Director UAB Dietetic Internship and Interim Director of the MS Program in Nutrition Sciences

Miltner, Rebecca S. School of Nursing
Assistant Professor of Nursing, 2010, B.S.N. (Georgia), M.S.N. (Wisconsin), Ph.D. (Maryland)

Minnix, Christopher College of Arts and Sciences

Department of English, Assistant Professor of English; Director, Freshman Composition, 2012, B.S. (Grace College), M.A. (Radford), Ph.D. (Tennessee), Rhetorical Theory, Transnational Rhetoric, Compositions Studies, Writing Program Administration

Mirov, Sergey B. College of Arts and Sciences

Department of Physics, University Professor, 1993, Master (Moscow Power Engineering Institute), Ph.D. (USSR Academy of Sciences), Experimental quantum electronics, solid-state lasers, laser spectroscopy

Mitchell, Lillian School of Dentistry
Department of Clinical Dentistry, Assistant Professor (General Dental Sciences); Dental implants and implant prostheses, Cad-Cam all ceramic restorations

Mitchell, Steven C. School of Dentistry

Department of Clinical Dentistry, Assistant Professor (Pediatric Dentistry); Early childhood caries, Technology, Education

Moellering, Douglas School of Health Professions

Department of Nutrition Sciences, PhD Assistant Professor (Nutrition Sciences); mitochondrial physiology, bioenergetics, and free radical-mediated tissue injury and disease pathologies. Currently, research is focused on mitochondrial free-radical production contributing to altered bioenergetics, the development of obesity, insulin resistance and T2DM, increased cardiovascular disease susceptibility, and aging.

Mohl, Raymond A. College of Arts and Sciences

Department of History, Distinguished Professor of History, 1996, B.A. (Hamilton), M.A.T. (Yale), M.A., Ph.D. (NYU)

Moneyham, Linda School of Nursing
Professor of Nursing; Senior Associate Dean for Academic Affairs, 2007, B.S.N. (Berea College), M.S.N. (Kentucky), D.S.N. (Indiana)

Monroe, Charles A. School of Engineering
Department of Materials Science and Engineering, Assistant Professor of Materials Science and Engineering, 2012, B.S. (Penn State), M.S., Ph.D. (Iowa), Metals Casting, Design for Manufacture, Process Modeling

Montgomery, Erwin School of Engineering
Department of Biomedical Engineering, Professor (Neurology); Deep brain stimulation

Monti, Denise College of Arts and Sciences

Department of Biology, Professor of Biology, 2013, B.S. (Cornell), M.P.H., Ph.D. (UAB), Microbiology

Moore, Hassan School of Engineering
Department of Mechanical Engineering, Assistant Professor of Mechanical Engineering, 2007, B.S. (Dillard), M.S. (Xavier), Ph.D. (Howard), Engineering Mathematics; Engineering Education; Non-Coaxial LIDAR Systems

Moradi, Lee School of Engineering

Department of Civil, Construction, and Environmental Engineering, Director of Engineering for the Center for Biophysical Sciences and Engineering, 1996, B.S., M.S., Ph.D. (UAB), Vibrations; Systems Engineering; Finite Elements Method

Morgan, Charity School of Public Health
Department of Biostatistics, Ph.D. (Harvard University), Assistant Professor. Finite Mixture Models. Bayesian Data Analysis. Multiple Sclerosis. Psychopathology.

Morgan, Kathryn College of Arts and Sciences

Department of Justice Sciences, Associate Professor of Justice Sciences; Director of African American Studies, 1991, B.S., M.A. (Texas Woman's), Ph.D. (Florida State), Corrections, Criminological Theory, Minorities, Violence

Morris, David School of Health Professions

Health Focused Patient/Client Management for Physical and Occupational Therapists, PT, PhD, Associate Professor of Physical Therapy

Morrissey, Michael College of Arts and Sciences

Department of Sociology, Professor (Health Care Organization and Policy); Health Policy

Morrow, Casey College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Viral morphogenesis and replication; gene therapy and vaccines

Moser, Stephen A. School of Health Professions

Department of Health Informatics, Ph.D., Associate Professor (Pathology/Microbiology)

Moss, Jacqueline School of Nursing

Professor of Nursing; Chair, Adult/Acute Health Chronic Care Foundations, 2011, B.S.N., M.S.N (Georgia State) Ph.D. (Maryland)

Motley, Carol School of Business

Department of Marketing, Industrial Distribution, Economics, Associate Professor of Marketing, 2011, B.S. (Southern Illinois), M.B.A. (Washington), Ph.D. (Georgia)

Mountz, John College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Professor; Medicine; Gene Therapy, T-cell Aging, Immunogenetics, and T-cell Imaging

Mrug, Sylvie College of Arts and Sciences

Department of Psychology, Associate Professor of Psychology, 2005, B.S., M.S., Ph.D. (Purdue)

Muccio, Donald D. College of Arts and Sciences

Department of Chemistry, Professor of Chemistry, 1982, B.S., Ph.D. (Ohio State)

Mueninghoff, Leonard A. School of Dentistry

Department of Clinical Dentistry, Professor (Prosthodontics); Implants, Biomaterials, Microleakage, Adhesives, Veneering, Composites

Mukhtar, Karolina College of Arts and Sciences

Department of Biology, Assistant Professor of Biology, 2010, M.S. (Szczecin), Ph.d. (Cologne), Plant Molecular Biology

Mukhtar, Shahid College of Arts and Sciences

Department of Biology, Assistant Professor of Biology, 2010, B.Sc., M.Sc. (Faisalabad), Ph.D. (Cologne) , Functional Genomics and Bioinformatics, Network Biology

Mulvihill, Beverly School of Public Health

Department of Health Care Organization and Policy, PhD, Associate Professor

Mumford, Gregory College of Arts and Sciences

Department of Anthropology, Associate Professor of Anthropology, 2007, B.S., M.A., Ph.D. (Toronto)

Munchus III, George M. School of Business

Department of Management, Information Systems, and Quantitative Methods , Professor of Management, 1976, B.S., M.B.A., Ph.D. (North Texas State), A.P.S.

Muntner, Paul School of Public Health

Department of Epidemiology, Professor (Epidemiology and Medicine); Renal Disease Epidemiology, Cardiovascular Epidemiology

Murphy, Patrice School of Health Professions

Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Developmental Disabilities, Orthotics

Murphy-Ullrich, Joanne College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Cell Biology, Pathology), Extracellular Matrix Control of Cell and Growth Factor Function

Murray, Pamela S. College of Arts and Sciences

Department of History, Professor of History, 1990, B.A. (New Mexico State), M.A., Ph.D. (Tulane)

Musa, Phillip F. School of Business

Department of Management, Information Systems, and Quantitative Methods , Associate Professor of Management, 2000, B.S., M.S., M.B.A. (Texas Tech)

Nabors, Eddie School of Business

Department of Accounting and Finance, Instructor of Accounting, 2011, B.S. (Alabama), M.Acc. (University of West Florida)

Nabors, L. Burt School of Engineering

Department of Biomedical Engineering, Professor (Neurology), Brain tumor treatment and research program

Nagy, Tim R. School of Health Professions

Department of Nutrition Sciences, PhD Professor and Vice Chair for Research (Nutrition Sciences); Regulation of Energy Expenditure; Body Fat/Caloric Restriction/Cancer; Small Animal Phenotyping

- Nahm, Moon** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Immunity to pneumococci
- Nakhmani, Arie** School of Engineering
Department of Electrical and Computer Engineering, Assistant Professor of Electrical and Computer Engineering, 2011, B.Sc., M.Sc., Ph.D. (Technion - Israel Institute of Technology), Computer Vision, Visual Tracking, Biomedical Image Analysis, Systems and Control
- Napierala, Dobrawa** School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Oral Maxillofacial Surgery): Trps1 transcription factor and molecular networks during formation and homeostasis of mineralizing tissues
- Navarette, Liliana** School of Health Professions
Department of Clinical and Diagnostic Sciences, Assistant Professor, Nuclear Medicine Technology Program, 2008, M.S. (Alabama)
- Navasca, Carmeliza** College of Arts and Sciences
Department of Mathematics, Assistant Professor of Mathematics, 2012, B.A. (California - Berkeley), Ph.D. (California - Davis), Multilinear Algebra, Control Theory, Optimization, Data Mining
- Neiva, Eduardo** College of Arts and Sciences
Department of Communication Studies, Professor of Communication Studies, 1993, B.A. (Catholic University of Rio de Janeiro), M.A., Ph.D. (Federal University of Rio de Janeiro)
- Nelson, Betty** School of Education
Department of Curriculum and Instruction, Associate Professor (Special Education); Low-Incidence and High-Incidence Disabilities, Assistive Technology, Collaboration in Schools
- Nelson, Catherine N.** School of Education
Department of Curriculum and Instruction, Associate Professor of Special Education, 1993, B.S. (Millsaps), M. Ed. (Louisiana State), Ph.D. (North Texas)
- Nelson, Dalton S.** School of Engineering
Department of Electrical and Computer Engineering, Assistant Professor of Electrical and Computer Engineering, 1994, B.S.E.E., M.S.E.E., (UAB), Ph.D. (UAH), P.E. (Alabama), Intelligent Control Systems, Medical Instrumentation, Software Systems and Algorithm Development
- Newcomer, Bradley R.** School of Health Professions
Department of Clinical and Diagnostic Sciences, Associate Professor of Nuclear Medicine Technology Program; Director, UAB Experiential Learning Honors Program, 1997, Ph.D. (Wright State University)
- Newton, Laura** School of Health Professions
Department of Nutrition Sciences, MAEd, RD, LD Assistant Professor (Nutrition Sciences); Clinical Nutrition, Nutrition and Cancer; Total Parenteral Nutrition
- Nichols, Robert H.** School of Engineering
Department of Mechanical Engineering, Research Professor of Mechanical Engineering, 2002, B.S. (Mississippi State), M.S., Ph.D. (Tennessee), Propulsion; Computational Fluid Dynamics; Turbulence Modeling
- Niederweis, Michael** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Role of porins in outer membrane permeability drug resistance of mycobacteria
- Nikles, Jacqueline A.** College of Arts and Sciences
Department of Chemistry, Associate Professor of Chemistry, 2001, B.S. (Marietta College), Ph.D. (Case Western Reserve)
- Ning, Haibin** School of Engineering
Department of Materials Science and Engineering, Research Assistant Professor, 2010, B.E. (Central South University, China); M.S. (Guangxi University, China), Ph.D. (UAB), Polymer Matrix Composite Materials, Metal; Design and Modeling
- Nkashama, Mubenga N.** College of Arts and Sciences
Department of Mathematics, Professor of Mathematics, 1989, B.S., M.S. (National University of Zaire), Ph.D. (Catholic University of Louvain, Belgium), Multilinear Algebra, Control Theory, Optimization, Data Mining
- Noah, Diana** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Volunteer (Medicine)
- Noah, James W.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, (Biochemistry and Molecular Genetics)
- Nordlund, Thomas M.** College of Arts and Sciences
Department of Physics, Associate Professor of Physics, 1990, B.A. (Oregon), M.S., Ph.D. (Illinois), Physics education; biological imaging and self-assembly
- Norton, Thomas T.** College of Joint Health Sciences
Department of Joint Health Sciences, Professor (Vision Sciences)
- Norton, Wynne E.** School of Public Health
Department of Health Education and Health Promotion, Assistant Professor, SOPH Health Behavior
- Novak, Jan** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Glycosylation in immune responses
- Novak, Robert** College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Malaria, mosquito-borne viruses

Nozell, Susan College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Cell Biology

Nugent, Kathy School of Health Professions

Department of Biotechnology, Assistant Professor

O'Conner, Stephen J. School of Health Professions

Department of Administration Health Services, Professor (Health Services Administration), Health Care Policy and Management, Service Quality and Orientation, Stakeholder Analysis

Ogard, William School of Health Professions

Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Sensory Function of Anterior Cruciate Ligament, Proprioception of Knee Joint, Anatomy, Function of Lumbar Musculature

Olsen, Michelle L. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D.; Assistant Professor; Physiology Biophysics; Glial potassium channels and glutamate transporters in injury and abnormal development

Oparil, Suzanne College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Professor; Medicine; Molecular and Cellular Mechanisms of Cardiovascular Disease

Oversteegen, Lex G. College of Arts and Sciences

Department of Mathematics, Professor of Mathematics, 1980, Kandidaat Doctorandus (Amsterdam), Ph.D. (Wayne State), Topology, Continuum Theory, Dynamical Systems

Owsley, Cynthia School of Optometry
Department of Vision Sciences, Professor (Ophthalmology)

O'Neil, Peter V. College of Arts and Sciences

Department of Mathematics, Professor Emeritus of Mathematics, 1978, B.S. (Fordham), M.S., Ph.D. (Rensselaer Polytechnic Institute), Graph Theory, Combinatorics

Packa, Joseph College of Arts and Sciences

Department of Public Administration, MPA. Service Area Executive (retired), American Red Cross Southeast Area: Grants management, strategic planning,

Paige, Alfred School of Engineering
Department of Biomedical Engineering, Assistant Professor (Neurology); Treatment of epilepsy, seizure localization and epilepsy surgery

Palcanis, Kent G. School of Dentistry
Department of Clinical Dentistry, Professor Emeritus (Periodontics); Clinical Periodontology, Control of periodontal disease

Parant, John College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Pharmacology and Toxicology); regulation as well as cause of genomic instability in cancer and other diseases

Parcak, Sarah H. College of Arts and Sciences

Department of Anthropology, Associate Professor of Anthropology, 2006, B.A. (Yale), M.A., Ph.D. (Cambridge)

Parpura, Vladimir College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Associate Professor; Neurobiology, The role of glial cells in physiology of nervous system

Parrish, Sherry School of Education

Department of Curriculum and Instruction, Assistant Professor of Early Childhood and Elementary Education, 2011, B.S. (Samford), M.A.Ed. (UAB), Ed.D. (Samford)

Pasche, Boris College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor and Director (Cell Biology, Medicine); The role of Transforming Growth Factor Beta (TGF-beta) in cancer development and progression, The biological effects of amplitude-modulated electromagnetic fields, The role of variants of the adiponectin pathway in cancer development

Pass, Mary Ann School of Public Health

Department of Health Care Organization and Policy, MD, Research Associate Professor

Patel, Rakesh College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Pathology); Modulation of Inflammation by Reactive Species

Paterson, Andrew J. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Medicine; the regulation of growth factor gene expression

Patrician, Patricia School of Nursing
Professor of Nursing; Banton Professorship, 2008, B.S.N. (Wilkes), M.S.N. (Texas), M.S. (U.S. Army War College), Ph.D. (Pennsylvania)

Patterson, James C. College of Arts and Sciences

Department of Chemistry, Assistant Professor of Chemistry, 2007, B.A. (Carleton), Ph.D. (California – Santa Barbara)

Paustian, Pamela E. School of Health Professions

Department of Clinical and Diagnostic Sciences, Assistant Professor and Program Director, Health Care Management Program, 2011, Ph.D. (UAB)

Pearson, Craig C. School of Health Professions
Department of Health Informatics, M.S.H.I., Credit Course Instructor (Health Services Administration)

Peel, Claire School of Medicine
Professor (Physical Therapy); Fall Prevention, Exercise as an Intervention to Enhance Mobility

Pekmezi, Dori School of Public Health
Department of Health Education and Health Promotion, Assistant Professor, SOPH, Health Behavior

Peng, Ji-Bin College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Medicine; Calcium transport proteins and their roles in health and disease

Perez, Patty School of Health Professions
Department of Rehabilitation Sciences, Assistant Professor (Physical Therapy); Orthopedic Rehabilitation

Perez-Costas, Emma College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Cell Biology Neurobiology

Perkins, Fran School of Education
Department of Curriculum and Instruction, Associate Professor of Reading Education, 2013, B.S., M.A.Ed., Ph.D. (UAB)

Perkins, Martinique School of Public Health
Department of Health Education and Health Promotion, Assistant Professor, SOPH, Health Behavior

Perry, Rodney School of Public Health
Department of Epidemiology, Assistant Professor (Epidemiology); Molecular Epidemiology, Laboratory Methods

Perry, Tonya School of Education
Department of Curriculum and Instruction, Assistant Professor (Secondary Education); Language Arts Education, 2002, B.A. (North Carolina), M.A., Ph.D. (UAB)

Perumean-Chaney, Suzanne College of Arts and Sciences
Department of Justice Sciences, Assistant Professor of Justice Sciences, 2004, B.S., M.S. (Nevada), Ph.D. (SUNY Albany), Quantitative Methods, Violence, Program Evaluation

Perumean-Chaney, Suzanne College of Arts and Science
Department of Criminal Justice, Assistant Professor of Justice Sciences, Statistics, Research Methods, Homicide

Peters, Gary B. School of Education
Department of Human Studies, Associate Professor, 2010, Leadership; Organizational Theory

Peters, Robert W. School of Engineering
Department of Civil, Construction, and Environmental Engineering, Professor of Civil, Construction and Environmental Engineering, 2001, B.S. (Northwestern), M.S., Ph.D. (Iowa State), P.E. (Indiana and Illinois), Environmental Engineering, Water and Wastewater Treatment, Hazardous Waste Treatment

Petri, Cynthia J. School of Education
Department of Human Studies, Associate Professor of Health Education, 1992, B.A., M.S., Ph.D. (Purdue)

Pevsner, Wanda D. School of Education
Department of Curriculum and Instruction, Assistant Professor of Special Education, 2004, B.S. (Judson), M.A., Ph.D. (UAB)

Philips, James College of Arts and Sciences
Department of Criminal Justice, Adjunct Instructor, Criminal Law, Evidence, and Procedure; White Collar and Corporate Crime; Cybercrime

Phillips, Jennan School of Nursing
Assistant Professor of Nursing, 2008, B.S.N. (Samford), M.S.N., D.S.N. (UAB)

Pijuan-Thompson, Vivian School of Health Professions
Department of Clinical and Diagnostic Sciences, Associate Professor, Ph.D.

Pillay, Selvum School of Engineering
Department of Materials Science and Engineering, Associate Professor of Materials Science and Engineering, 2007, Bach (M L Suttan Technikon), M.S.M.E. (Florida AM), Ph.D. (UAB), Polymer Matrix Composites, Manufacturing and Processing, Design for Manufacture

Pillion, Dennis J. College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pharmacology and Toxicology); Endocrine Pharmacology; Administration of Insulin in Eye Drops and Nose Drops; Diagnosis and Treatment of Diabetes Mellitus

Pirkelbauer, Peter College of Arts and Sciences
Department of Computer and Information Sciences, Assistant Professor of Computer and Information Sciences, 2012, Dipl.-Ing. (Linz, Austria), MBA, Ph.D. (Texas AM University), Compilers, Runtime Systems, High Performance Computing, Non-Blocking Software Design

Pittler, Steven College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Characterization of Photoreceptor Metabolism and Retinal Degeneration

Piyathilake, Chandrika School of Health Professions

Department of Nutrition Sciences, PhD Associate Professor (Nutrition Sciences); Lung Cancer and Biomarkers

Plaisance, Eric School of Education

Department of Human Studies, Assistant Professor of Exercise Physiology, 2013, B.S. (Nicholls State), M.S. (United States Sports Academy), Ph.D. (Auburn)

Plutchak, T. Scott School of Health Professions

Department of Health Informatics, M.A., Associate Professor (Lister Hill Library of the Health Sciences)

Pogwizd, Steven School of Engineering

Department of Biomedical Engineering, Professor, Division of Cardiovascular Disease (Department of Medicine), Medicine, Physiology and Biophysics

Pollard, Andrew School of Engineering

Department of Biomedical Engineering, Professor of Biomedical Engineering, 1996, B.S.E., M.S.E., Ph.D. (Duke), Cardiac electrophysiology, Computer simulations and Modeling of electrical signals of the heart

Ponce, Brent School of Engineering

Department of Biomedical Engineering, Assistant Professor (Surgery), Biomechanics of the shoulder, Topics pertinent in resident education

Ponnazhagan, Selvarangan College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Pathology); Adeno-associated virus gene therapy

Popov, Kirill College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Biochemistry and Molecular Genetics); Multienzyme complexes, Protein kinases, Protein phosphatases, Metabolic control

Postlethwait, Edward M. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Environmental Health Sciences; Environmental Induction of pulmonary epithelial injury

Powell, Larry College of Arts and Sciences

Department of Communication Studies, Professor of Communication Studies, 1998, B.A., M.A. (Auburn), Ph.D. (Florida)

Powers, Thomas L. School of Business

Department of Marketing, Industrial Distribution, Economics, Professor of Marketing and Industrial Distribution, 1985, B.S., M.B.A. (Eastern Michigan), Ph.D. (Michigan State)

Pozzo-Miller, Lucas College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Neurobiology; Neurotrophins, Ca²⁺ Signaling, Synapse Development and Plasticity, Mental Retardation, Rett Syndrome

Prado, Josephine School of Education

Department of Curriculum and Instruction, Assistant Professor of English as a Second Language, 2013, B.A. (Agnes Scott College); M.A., Ph.D. (Alabama)

Prather-Kinsey, Jenice School of Business

Department of Accounting and Finance, Professor of Accounting; Chair, Department of Accounting and Finance, 2001, B.S. (Lindenwood), M.S. (Illinois), PhD. (Alabama), C.P.A.

Preskitt, Julie School of Public Health

Department of Health Care Organization and Policy, PhD, Assistant Professor

Preuss, Meredith College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Medicine)

Prevelige, Jr., Peter College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Microbiology; Structural Biology of Viral Assembly and Infection

Prince, Charles W. School of Health Professions

Department of Nutrition Sciences, PhD Emeritus Professor (Nutrition Sciences), Bone Metabolism, Vitamin D Function; Osteopontin, Orthopedic Implant Biocompatibility, Cellular Transduction of Mechanical Load

Pritchard, David G. College of Joint Health Sciences

Department of Joint Health Sciences, Professor (Biochemistry and Molecular Genetics); Molecular Basis for the Pathogenicity of Gram-Positive Bacteria

Pryor, Erica School of Nursing

Associate Professor of Nursing, 2000, B.S.N. (UAH), M.S.N. (UAB), Ph.D. (Emory)

Qin, Hongwei College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor; Immune signaling

Quinlan, Kieran College of Arts and Sciences

Department of English, Professor of English, 1986, B.A., M.A. (Oxford), M.A., Ph.D. (Vanderbilt)

Quintana, Jose B. School of Health Professions

Department of Health Administration, Assistant Professor (Health Services Administration); Outcomes Management and Process Improvement, Quality, Outcomes Management and Process Improvement, Quality

- Rabon, David G.** School of Engineering
Department of Information Engineering and Management, Instructor, Information Engineering and Management; President, The Braintrust Consulting Group, 2007, BSCS (Auburn), MSEE (UAB), Agile, scrum, leadership
- Racca, Joshua** School of Business
Department of Accounting and Finance, Assistant Professor of Accounting, 2011, Ph.D. pending University of North Texas (Denton, Texas)
- Rahemtulla, Firoz** School of Dentistry
Department of Clinical Dentistry, Professor Emeritus (Prosthodontics); Connective tissue biochemistry, Oxidants and antioxidant enzymes, Salivary proteins, Peroxidases
- Raisch, Kevin P.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Radiation Oncology)
- Raju, Raghavan** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Acute inflammation
- Raman, Chander** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Medicine; Lymphocyte activation, immune tolerance and autoimmunity tolerance and autoimmunity
- Ramp, Lance** School of Dentistry
Department of Clinical Dentistry, Assistant Professor (General Dental Sciences); Wear and degradation of dental materials
- Ramp, Merrie H.** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences); Dental materials testing
- Raut, Samiksha** College of Arts and Sciences
Department of Biology, Assistant Professor of Biology, 2012, B.S., M.S. (Nagpur), Ph.D. (UAB), General Biology and Microbiology
- Rauterkus, Andreas** School of Business
Department of Accounting and Finance, Associate Professor of Finance, 2007, Diploma (J. W. Goethe University, Germany), M.B.A. (East Carolina), Ph.D. (Cincinnati)
- Ray, Midge N.** School of Health Professions
Department of Health Services Administration, Associate Professor, Health Information Management Program, 1983, R.N, M.S.N. (UAB)
- Read, Russell W.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor; Ocular immunology
- Rector, Mitch** College of Arts and Sciences
Department of Forensic Sciences, Adjunct Faculty; Conventional Criminalistics
- Redden, David T.** School of Public Health
Department of Biostatistics, Ph.D. (Alabama), Professor. Regression Diagnostics, Admixture, Association Studies.
- Reddy, Michael** School of Dentistry
Department of Clinical Dentistry, Professor (Periodontics); Periodontal disease progression, Implants, Periodontal therapeutics
- Reed, Linda** School of Nursing
Assistant Professor of Nursing, 1980, B.S.N., M.S.N. (UAB), Ph.D. (Texas)
- Reiff, Donald** School of Health Professions
Department of Surgical Physican Assistant Studies, Medical Director; Trauma
- Reilly, Kevin D.** College of Arts and Sciences
Department of Computer and Information Sciences, Professor Emeritus of Computer and Information Sciences, 1970, B.S. (Creighton), M.S. (Nebraska), Ph.D. (University of Chicago)
- Renfrow, Matthew B.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics)
- Reynolds, Robert C.** College of Arts and Sciences
Department of Chemistry, Research Professor of Chemistry, 2012, B.S. (University of Virginia), Ph.D. (Duke)
- Rice, Marti** School of Nursing
Professor of Nursing, 1997, B.S.N. (Creighton), M.S.N. (Medical College of Georgia), Ph.D. (Georgia State)
- Richmond, Virginia Peck** College of Arts and Sciences
Department of Communication Studies, Professor of Communication Studies, 2006, B.A. (West Virginia Institute of Technology), M.A. (West Virginia), Ph.D. (Nebraska)
- Riddle, Nicole C.** College of Arts and Sciences
Department of Biology, Assistant Professor of Biology, 2012, B.S. (Missouri), Ph.D. (Washington University in St. Louis), Epigenetics and Chromatin Structure
- Riggs, Jennifer** School of Nursing
Assistant Professor fo Nursing, 2011, B.S.N. (Vermont), M.S.N., Ph.D. (Case Western Reserve)

- Rivera, C. Julio** School of Business
Department of Management, Information Systems, and Quantitative Methods, Associate Professor of Information Systems, 1988, B.S., M.S. (Texas AM), M.B.A. (Southern Mississippi), Ph.D. (Mississippi State)
- Robbin, Michelle** School of Engineering
Department of Biomedical Engineering, Professor (Radiology), Hemodialysis patient ultrasound, ultrasound contrast agents and vascular ultrasound
- Roberson, Erik** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Assistant Professor; Neurology; Neurobiology of Alzheimer's Disease and Frontotemporal Dementia
- Robicheaux, Robert A.** School of Business
Department of Marketing, Industrial Distribution, Economics, Chair, Department of Marketing, Industrial Distribution, and Economics; Professor of Marketing and Industrial Distribution, 2004, B.S., M.B.A., Ph.D. (Louisiana State University)
- Robinson, Cheryl** School of Nursing
Associate Professor of Nursing, 2011, B.S.N. (Alabama), M.S.N. (Colorado), D.N.S. (LSU)
- Robinson, Christopher** College of Arts and Sciences
Department of Psychology, Assistant Professor of Psychology, 2004, B.A. (New College), Ph.D. (UAB)
- Rodriguez, Christiana M.** College of Arts and Sciences
Department of Psychology, Associate Professor of Psychology, 2013, B.S. (Miami); M.S., Ph.D. (Florida)
- Rogers, Jack M.** School of Engineering
Department of Biomedical Engineering, Professor of Biomedical Engineering, 1994, B.S., M.S., Ph.D. (California-San Diego), Cardiac electrophysiology, Computer simulations, Signal analysis of cardiac arrhythmias
- Roseman, Jeffrey** School of Public Health
Department of Epidemiology, Professor Emeritus (Epidemiology); Chronic Disease Epidemiology, Cardiovascular Epidemiology, Diabetes Epidemiology, Injury Epidemiology
- Ross, Douglas H.** School of Engineering
Department of Mechanical Engineering, Assistant Professor of Mechanical Engineering, 2008, B.S. (Illinois), M.S. (UAB), Computer Aided Design; Undergraduate Education; Machine Design
- Ross, Lesley A.** College of Arts and Sciences
Department of Psychology, Assistant Professor (Psychology); Lifespan Developmental Psychology, Cognitive Aging, Healthy Aging, Behavioral Interventions, Human Factors Engineering
- Roth, Kevin** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor and Chair (Pathology); Molecular Regulation of Neuronal Cell Death
- Rothrock, Angela G.** School of Medicine
Assistant Professor (Division of Gerontology and Geriatric Medicine)
- Roussel, Linda** School of Nursing
Professor of Nursing, DNP Program Coordinator, 2013, B.S.N. (Williams Cary), M.S.N. (Southern Mississippi), Ph.D. (UAB)
- Roy, Jane** School of Education
Department of Human Studies, Associate Professor of Physical Education, 2001, B.S., M.A., Ph.D. (Alabama)
- Rucks, Andrew** School of Public Health
Department of Health Care Organization and Policy, PhD, Professor
- Rumbaugh, Gavin** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Neurobiology)
- Ryan, Cynthia** College of Arts and Sciences
Department of English, Associate Professor of English; Director, Internships, 1998, B.S., M.A. (Illinois State), Ph.D. (Purdue)
- Ryan, Thomas M.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics); Gene Regulation, Stem Cells, Mouse Models, Mutagenesis, Cell therapies
- Saad, Jamil** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor; Biochemistry and structural biology of retroviruses
- Sadowsky, P. Lionel** School of Dentistry
Department of Clinical Dentistry, Professor Emeritus (Orthodontics); Temporomandibular joint dysfunction, Growth and treatment, Surgical Orthodontics, Bonding
- Saito, Yoshimi** College of Arts and Sciences
Department of Mathematics, Professor Emeritus of Mathematics, 1983, B.A., M.A., Ph.D. (Kyoto, Japan), Scattering Theory, Differential Equations
- Salama, Talat** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Assistant Professor of Civil, Construction, and Environmental Engineering, 2005, B.S.C.E. (Rutgers), M.S. (The American University in Cairo, Egypt), Ph.D. (Rutgers), P.E. (Indiana and Alabama)
- Sanders, Paul** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Medicine, Physiology Biophysics); Mechanisms of Disease Progression in the Kidney

- Sanders, Tommy J.** School of Health Professions
Department of Health Informatics, Ph.D, Credit Course Instructor (Health Services Administration)
- Sanderson, Ralph D.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pathology); Role of Heparan Sulfate and Heparanase in Regulating the Tumor Microenvironment
- Santoro, Nick J.** School of Engineering
Department of Mechanical Engineering, Research Associate Professor of Mechanical Engineering, 2007, B.S., M.S. (Alabama), Power Generation; Thermal Dynamics; Internal Combustion Engines
- Sathiakumar, Nalini** School of Public Health
Department of Epidemiology, Professor (Epidemiology); Environmental Epidemiology, Occupational Epidemiology, Chronic Disease Epidemiology
- Savage, Arline** School of Business
Department of Accounting and Finance, Professor of Accounting, 2012, Ph.D. (University of Port Elizabeth-South Africa), CA (SA)
- Savage, Grant** School of Business
Department of Management, Information Systems, and Quantitative Methods, Professor of Management, 2011, B.A. (Connecticut), M.A., Ph.D. (Ohio State)
- Sawyer, Patricia** College of Arts and Sciences
Department of Sociology, Associate Professor (Medicine; Center for Aging); Gerontology
- Saxena, Nitesh** College of Arts and Sciences
Department of Computer and Information Sciences, Associate Professor of Computer and Information Sciences, 2011, B.S. (Kharagpur), M.S., Ph.D. (University of California-Irvine)
- Schafer, James** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor Emeritus; Physiology Biophysics; Regulation of Salt and Water Reabsorption by the Distal Nephron
- Schneider, David A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry Molecular Genetics)
- Schroder, Kerstin** School of Public Health
Department of Health Education and Health Promotion, Associate Professor, SOPH, Health Behavior
- Schroeder, Harry** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Professor; Medicine; The Development and Function of Lymphocyte Antigen Receptors. Genetics of Primary Immune Deficiency Diseases
- Schroeder, Jr., Harry W.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Immunogenetics
- Schwebel, David C.** College of Arts and Sciences
Department of Psychology, Professor of Psychology, Associate Dean of Research in the Sciences, 2000, B.A. (Yale), M.A., Ph.D. (Iowa)
- Schwiebert, Lisa** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Physiology Biophysics; Airway inflammation; lung function; asthma and exercise
- Scott, Mary Katherine** School of Education
Department of Curriculum and Instruction, Instructor of Early Childhood and Elementary Education, 2010, EdS (UAB)
- Scripa, Rosalia N.** School of Engineering
Department of Materials Science and Engineering, Professor of Materials Science and Engineering: Professor of Biomedical Engineering, 1976, B.S. (Alfred), M.S. (Pennsylvania State), M.S., Ph.D. (Florida), P.E. (Alabama), Structure and Properties of Glass and Ceramics, Semiconductor Crystal Growth, Electronic and Magnetic Materials, Growth and Characterization of II-VI Semiconducting Compounds
- Seay, Susan** School of Education
Department of Curriculum and Instruction, Assistant Professor of English as a Second Language, 2011, B.S. (Auburn); M.A.Ed., Ph.D. (UAB)
- Segner, E. P. Jr.** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Professor Emeritus of Civil and Environmental Engineering, 1990, B.S.C.E., M.S.C.E. (Texas), Ph.D. (Texas AM), P.E. (Alabama, Texas, Oklahoma, Tennessee), Engineering Education, Engineering Mechanics, Structural Engineering
- Segrest, Jere** School of Engineering
Department of Biomedical Engineering, Professor, Division of Gerontology/Geriatrics/Palliative Care (Department of Medicine), Plasma lipoprotein structure and function
- Selleck, Cynthia** School of Nursing
Professor and Associate Dean for Clinical Affairs Partnerships, 2010, B.S.N., (Emory), M.S.N. (Vanderbilt), D.S.N. (UAB)
- Sen, Bisakha** School of Public Health
Department of Health Care Organization and Policy, PhD, Associate Professor
- Serra, Rosa** College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Cell, Development Integrative Biology), Mechanism of TGF- β action in developmental and disease processes

Sethu, Palaniappan School of Engineering

Department of Biomedical Engineering, Associate Professor of Medicine and Biomedical Engineering, 2013, M.Eng., M.S., Ph.D. (University of Michigan, Ann Arbor), B.Tech (PSG College of Technology, India), Microfluidic cellular and molecular analysis, Physiologically relevant models of cardiac and vascular tissue, Nanotechnology based approaches to study sub-cellular signaling

Sha, Bingdong (Ben) College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor (Cell Biology); Structure and Function of Molecular Chaperones

Shacka, John College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Pathology; Regulation of Neuron Death by the Autophagy Lysosome Pathway

Shadix, Jonghee The Graduate School
Graduate School Professional Development Program, Pronunciation and Intelligibility Training, English as a Second Language

Shalev, Anath College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor (Medicine); Molecular biology of diabetes, beta cell biology, apoptosis, oxidative stress, transcriptional regulation of gene expression, diabetes complications

Shaw, George College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Professor; Human retroviruses; molecular virology and pathogenesis

Shaw, Sharon E. School of Health Professions

Department of Rehabilitation Sciences, Associate Professor (Physical Therapy); Health Outcomes Assessment, Neurological Rehabilitation

Shealy, David L. College of Arts and Sciences

Department of Physics, Professor of Physics, Chair, Department of Physics, 1973, B.S., Ph.D. (Georgia), Geometrical optics; laser beam shaping optics; radiative transfer; caustic and optical aberration theory

Shewchuk, Richard M. School of Medicine
Professor (Health Services Administration); Health and Long-Term Care Issues in Aging

Shivers, Charles Herbert School of Engineering

Department of Engineering, PhD, PE, CSP, Professor and Associate Director, ASEM; Deputy Director Safety and Mission Assurance (retired), Marshall Space Flight Center - NASA

Shores, Melanie L. School of Education

Department of Human Studies, Assistant Professor of Educational Psychology and Research, 2005, B.S. (Auburn), M.A.E. (Auburn), M.A. (Auburn), Ph.D. (Auburn)

Shrestha, Sadeep College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Genetic Epidemiology

Shterenberg, Roman G. College of Arts and Sciences

Department of Mathematics, Associate Professor of Mathematics, 2007, M.S., Ph.D. (St. Petersburg State University – Russia), Mathematical Physics, Spectral Theory, Inverse Problems, Partial Differential Equations, Non-linear Partial Differential Equations

Shyrokau, Barys School of Engineering

Department of Mechanical Engineering, Instructor of Mechanical Engineering, 2013, Dipl.-Ing. (Belarusian National Technical University, Belarus)

Sicking, Dean L. School of Engineering

Department of Mechanical Engineering, Professor of Mechanical Engineering, 2012, B.S., M.S., Ph.D. (Texas AM), Crashworthiness Design; Sports Safety Equipment; Computational Mechanics

Siegal, Gene College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Endowed Professor (Cell Biology, Pathology); Gene therapy of solid tumors

Siegel, Daniel College of Arts and Sciences

Department of English, Associate Professor of English; Director, Honors, Department of English, 2002, B.A. (Chicago), M.A., Ph.D. (Virginia)

Simien, Clayton College of Arts and Sciences

Department of Physics, Assistant Professor of Physics, 2013, B.S. (Prairie View AM), Ph.D. (Rice), Strongly correlated ultracold neutral plasmas; next generation frequency standards; precision measurements and variations in fundamental constants; quantum dipolar gases and rare-earth elements; laser cooling; nanotechnology; atomic sensors

Simien, Daneesh School of Engineering

Department of Materials Science and Engineering, Assistant Professor of Materials Science and Engineering, 2014, B.S., M.S., Ph.D. (Rice University), Self Corrective and Response, "Smart" Nano Scale Composite Materials, Structure-Property Relationships of Polymer Composites Inclusive of Rheological and Electrical Properties, Nano Scale Sensors and Flexible Robust Electronics

Simpson, Cathy School of Public Health

Department of Health Education and Health Promotion, Associate Professor, SOPH Health Behavior

- Sims, Michele** School of Education
Department of Curriculum and Instruction, Associate Professor of Reading and High School Education, 1999, B.A., M.S. (CUNY), Ed.D. (Pennsylvania)
- Sims, Sandra** School of Education
Department of Human Studies, Assistant Professor of Physical Education, 2005, B.S. (Montevallo), M.A. (UAB), Ed.S. (UAB), Ph.D. (Southern Mississippi)
- Simányi, Nándor** College of Arts and Sciences
Department of Mathematics, Professor of Mathematics, 1999, M.S., Ph.D. (Rolánd Eötvös - Hungary), Dr.M.S. (Hungarian Academy of Sciences), Dynamical Systems, Ergodic Theory, Topology
- Sincich, Lawrence** School of Optometry
Department of Vision Sciences, Assistant Professor (Vision Sciences)
- Singleton, Tommie** College of Arts and Sciences
Computer Forensics and Security Management, Associate Professor (Accounting and Finance), Forensic Accounting; Information Technology Audits; Fraud
- Sisiopiku, Virginia P.** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Associate Professor of Civil, Construction and Environmental Engineering, 2002, B.S. (Aristotelian University of Thessaloniki), M.S., Ph.D. (Illinois-Chicago), Transportation Engineering, Traffic Engineering
- Sittitavornwong, Somasak** School of Dentistry
Department of Clinical Dentistry, Associate Professor (Oral Maxillofacial Surgery): Obstructive sleep apnea, airway, fluid dynamics
- Skjellum, Anthony** College of Arts and Sciences
Department of Computer and Information Sciences, Professor of Computer and Information Sciences; Chair, Department of Computer and Information Sciences, 2003, B.S., M.S., Ph.D. (California Institute of Technology)
- Sloan, John** College of Arts and Sciences
Department of Justice Sciences, Professor and Chair, Department of Justice Sciences, 1988, B.S., M.A. (Eastern Michigan), Ph.D. (Purdue), Victimization and Fear of Victimization, Campus Crime, Policy, Program Evaluation, Professional Ethics
- Sloan, Kenneth** College of Arts and Sciences
Department of Computer and Information Sciences, Associate Professor of Computer and Information Sciences; Associate Professor of Biomedical Engineering, 1990, Sc.B. (Brown), M.S. (Stevens Institute of Technology), Ph.D. (Pennsylvania)
- Sloane, Michael E.** College of Arts and Sciences
- Department of Psychology, Associate Professor of Psychology, Director, University Honors Program, 1982, B.A., M.A. (University College, Dublin), Ph.D. (Northwestern)
- Slovensky, Donna J.** School of Health Professions
Professor of Health Services Administration; Associate Dean, School of Health Professions, 1996, Ph.D. (UAB)
- Smith, Daniel L. Jr** School of Health Professions
Department of Nutrition Sciences, PhD Assistant Professor (Nutrition Sciences); The interaction of diet and metabolism in relationship to aging and disease; obesity, calorie restriction, brown adipose tissue
- Smith, Glenda** School of Nursing
Assistant Professor of Nursing, 2006, B.S.N., (North Carolina Central), M.S.N. (Vanderbilt), D.S.N. (Texas-Houston Health Science Center)
- Smith, Jeffrey B.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Pharmacology and Toxicology); Ubiquitin proteasome system (UPS) in apoptosis; Escape apoptosis by cancer cells; down-regulation of protein kinaseC by UPS; Orphan receptor triggered by the carcinogenic metal cadmium
- Smith, Peter** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Physiology and Biophysics; The role of the membrane cytoskeleton in regulating the cell surface expression of epithelial transport proteins
- Smith, Timothy** College of Arts and Sciences
Department of Public Administration, Instructor (Government): Public administration theory, public law, human resource management and health policy.
- Smith, Tommy G.** School of Education
Department of Curriculum and Instruction, Associate Professor of High School Education, 1989, B.S., M.S., Ed.D. (Auburn)
- Smith, William M.** School of Engineering
Department of Biomedical Engineering, Professor Emeritus of Biomedical Engineering, 1994, B.S. (Oglethorpe), Ph.D. (Duke)
- Snyder, Scott W.** School of Education
Department of Human Studies, Associate Professor of Research and Early Childhood Special Education, 1988, B.A. (SUNY-Potsdam), M.S., Ph.D. (Purdue)
- Sodhi, Monsheel** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Neurobiology); Genetic and transcriptional variation in psychosis, depression and suicide
- Soleymani, Taraneh** School of Health Professions

Department of Nutrition Sciences, MD Assistant Professor (Nutrition Sciences); Clinical nutrition, Weight lost and management.

Solorio, Tamar College of Arts and Sciences

Department of Computer and Information Sciences, Assistant Professor of Computer and Information Sciences, 2009, B.S. (Universidad Autónoma de Chihuahua, Mexico), M.S. (Instituto Nacional de Astrofísica, Óptica y Electrónica [INAOE], Mexico), Ph.D. (INAO, Mexico)

Song, Yuhua School of Engineering

Department of Biomedical Engineering, Assistant Professor of Biomedical Engineering, 2006, B.S. (Jilin University of Technology), M.S. (Harbin University of Science and Technology), Ph.D. (Harbin Institute of Technology), Computational biomechanics, Computational biology, Multiscale modeling

Sontheimer, Harald School of Optometry

Department of Vision Sciences, Professor (Neurobiology)

Sorge, Robert College of Arts and Sciences

Department of Psychology, Assistant Professor of Psychology, 2012, H.B.Sc. (McMaster), M.A. (Wilfrid Laurier), Ph.D. (Concordia)

Sorscher, Eric College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Professor; Cystic Fibrosis and Molecular Genetics; Patient Oriented Research

Souccar, Nada M. School of Dentistry

Department of Clinical Dentistry, Assistant Professor (Orthodontics); Craniofacial growth, development and aging; three dimensional imaging, biology of tooth movement.

Spezzini, Susan K. School of Education

Department of Curriculum and Instruction, Associate Professor of English as a Second Language, 2005, B.A. (California), M.A. (California), Ph.D. (Alabama)

Sprague, Alan P. College of Arts and Sciences

Department of Computer and Information Sciences, Professor of Computer and Information Sciences; Associate Professor of Medicine, 1988, B.A. (Oberlin), M.A.T. (Northwestern), M.S., Ph.D. (Ohio State)

Squadrito, Giuseppe L. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Research Associate Professor; Environmental Health Sciences; Development, design and evaluation of dynamic multi-component molecular systems that can be used to understand

Srivastava, Om P. School of Optometry

Department of Vision Sciences, Professor (Vision Sciences)

Standaert, David G. College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Endowed Professor; Medicine/Neurology; the effects of oxidants in biological systems of various degrees of complexity

Stanishevsky, Andrei V. College of Arts and Sciences

Department of Physics, Associate Professor of Physics, 2002, M.S. (Minsk Radioengineer Institute-USSR), Ph.D. (Belarus Academy of Sciences –USSR), Focused ion beam micro- and nanofabrication; PVD thin films deposition, characterization, and application; nanoparticle research

Starr, Shannon College of Arts and Sciences

Department of Mathematics, Assistant Professor of Mathematics, 2012, B.A. (California - Berkeley), Ph.D. (California - Davis), Mathematical Physics and Probability

Stavrinou, Despina College of Arts and Sciences

Department of Psychology, Assistant Professor of Psychology and Medicine, Director, Translational Research for Injury Prevention (TRIP) Laboratory, 2011, B.S. (Alabama), M.A., Ph.D. (UAB)

Steele, Brian D. College of Arts and Sciences

Department of History, Associate Professor of History, 2005, B.A., M.A. (Tulsa), Ph.D. (UNC)

Steele, Chad College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Associate Professor; Pulmonary immunology

Stepanikova, Irena College of Arts and Sciences

Department of Sociology, Assistant Professor of Sociology, 2012, B.A. (Campbellsville), M.A. (Masaryk), Ph.D. (Stanford)

Stettheimer, Tim School of Health Professions

Department of Health Informatics, Adjunct Professor (Health Services Administration)

Steyn, Adrie College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Mechanism of Mycobacterium tuberculosis virulence

Stokely, Ernest M. School of Engineering

Department of Biomedical Engineering, Professor Emeritus of Biomedical Engineering; Associate Dean Emeritus of Engineering, 1990, B.S.E.E. (Mississippi State), M.S.E.E., Ph.D. (Southern Methodist), P.E. (Texas)

Stolz, Günter College of Arts and Sciences

Department of Mathematics, Professor of Mathematics, 1994, Ph.D. (Frankfurt, Germany), Spectral Theory, Mathematical Physics

- Strevy, Deborah** School of Education
Department of Curriculum and Instruction, Assistant Professor of Early Childhood and Elementary Education, 2004, B.S. (UAB), M.A.Ed. (UAB), Ph.D. (UAB)
- Strong, Theresa** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Biochemistry Molecular Genetics, Genetics, Medicine); Identification of Tumor Antigens and Development of Cancer Vaccines
- Sullivan, Andrew** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Instructor of Civil, Construction and Environmental Engineering, 2009, B.S.C.E. (Pennsylvania), M.S.C.E. (UAB), P.E. (Alabama), Transportation Engineering, Traffic Operations
- Summerlin, Jennifer** School of Education
Department of Curriculum and Instruction, Instructor of Reading, 2011, B.A., M.A.Ed. (UAB), NBPTS
- Swatzell, Kelley** School of Health Professions
Department of Surgical Physican Assistant Studies, Assistant Professor; Public Health
- Sweatt, David** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Neurobiology; Signal Transduction Mechanisms in Learning and Memory
- Szafarski, Magdalena** College of Arts and Sciences
Department of Sociology, Assistant Professor of Sociology, 2012, B.A., M.A. (University of Michigan), Ph.D. (University of Cincinnati)
- Szalai, Alex** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Inflammation, innate immunity, and the acute phase proteins in health and disease
- Sztul, Elizabeth** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Professor; Cell Biology; Membrane Traffic; Protein Degradation
- Szychowski, Jeffery** School of Public Health
Department of Biostatistics, Ph.D. (Alabama), Assistant Professor. Clinical Trials, Maternal and Fetal Medicine Studies, Regression Analysis and Smoothing Methods, Categorical Data Analysis, Survival Analysis.
- Taherian, Hessam** School of Engineering
Department of Mechanical Engineering, Assistant Professor of Mechanical Engineering, 2010, B.S. (Isfahan University of Technology, Iran), M.S. (Amirkabir University of Technology, Iran), Ph.D. (Dalhousie, Canada)
- Talbott Forbes, Laura L.** School of Education
Department of Human Studies, Assistant Professor of Health Education, 2005, B.S. (Ball State), M.S. (Central Florida), Ph.D. (South Carolina)
- Tang, Jianming** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Medicine, Microbiology); Genetic and Epigenetic Correlates of Infection and Immunity
- Tanik, Murat M.** School of Engineering
Department of Electrical and Computer Engineering, Professor of Electrical and Computer Engineering, 1998, B.S. (Middle East Technical), M.C.S., Ph.D. (Texas AM), Software Systems Engineering, Quantum Information Theory, Embedded Systems
- Tanju, Deborah W.** School of Health Professions
Department of Administration Health Services, Professor (Accounting); Internal Auditing, Financial Accounting
- Taratoot, Cole** College of Arts and Sciences
Department of Public Administration, Assistant Professor (Government), B.S. (Georgia), M.P.A., Ph.D. (West Georgia), Administrative law, judicial politics, constitutional law, quantitative analysis
- Taub, Edward** College of Arts and Sciences
Department of Psychology, University Professor of Psychology, 1986, B.A. (Brooklyn), M.A. (Columbia), Ph.D. (New York)
- Temple, Gale M.** College of Arts and Sciences
Department of English, Associate Professor of English; Director, Graduate Studies, 2001, B.S. (Michigan), M.A., Ph.D. (Loyola-Chicago)
- Tent, James F.** College of Arts and Sciences
Department of History, Professor and University Scholar Emeritus (History); Modern European History; Germany, Military History, Cold War
- Terndrup, Thomas E.** School of Health Professions
Department of Health Informatics, M.D., Professor (Emergency Medicine)
- Thacker, Robert W.** College of Arts and Sciences
Department of Biology, Professor of Biology, 2000, B.S. (Duke), M.S., Ph.D. (Michigan), Ecology and Systematics
- Theibert, Anne** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Neurobiology; Role of phosphoinositides in developmental neurobiology
- Thomas, Joe P.** School of Dentistry
Department of Clinical Dentistry, Adjunct Professor (Endodontics); Clinical Caries Investigation, Sickle Cell Anemia

- Thomas, Vinoy** School of Engineering
Department of Materials Science and Engineering, Research Assistant Professor of Materials Science and Engineering, 2007, B.S., M.S. (University of Kerala, India), Ph.D. (Sree Chitra Tirunal Institute for Medical Sciences Technology, India), Polymeric Biomaterials and 3D Composite Scaffolds for Tissue Engineering, Nanomaterials and Nanodiamonds for Biomedical Applications, Green Materials Synthesis and Structure-Property Relationships
- Thompson, Sam** School of Business
Department of Management, Information Systems, and Quantitative Methods, Visiting Assistant Professor of Information Systems, 2013, B.A., M.B.A. (Texas AM); M.S., Ph.D. (Alabama)
- Thompson, Sunnie** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Microbiology; Translation initiation during viral infection, tumorigenesis, or under stress.
- Thornton, Jr., John B.** School of Dentistry
Department of Clinical Dentistry, Professor (Pediatric Dentistry); Incidence of Periodontal Disease in the Mentally Retarded, Dental Health of Aging and Elderly Persons with Mental Retardation
- Thottassery, Jaideep V.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Pathology)
- Timares, Laura** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Cell Biology, Pathology); Engineering Dendritic Cells for Immunotherapy
- Tiwari, Hemant** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Genetic Linkage Analysis, Disequilibrium Mapping, Population Genetics, Molecular Evolution, Bioinformatics, and Genetics of Infectious Diseases
- Tollefsbol, Trygve** College of Arts and Sciences
Department of Biology, Professor of Biology, 1998, B.S. (Houston), M.S., D.O., Ph.D. (North Texas Health Sciences Center), Gene Regulation in Cancer and Aging
- Townes, Tim M.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor and Chair (Biochemistry and Molecular Genetics); Regulation of Gene Expression During Development
- Trimm, Jerry M.** School of Health Professions
Department of Health Services Administration, Associate Professor, Health Care Management, 2006, Ph.D. (UAB)
- Tse, Hubert** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor; diabetes, reactive oxygen species, autoimmune disease
- Tucholski, Janusz** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Psychiatry and Behavioral Neurobiology)
- Tucker, Diane C.** College of Arts and Sciences
Department of Psychology, Professor of Psychology, Director, Science and Technology Honors Program, 1984, B.S., M.S., Ph.D. (Iowa)
- Tucker, Jalie** School of Public Health
Department of Health Education and Health Promotion, Professor, SOPH, Health Behavior
- Turan, Bulent** College of Arts and Sciences
Department of Psychology, Assistant Professor of Psychology, 2011, B.S. (Bogazici), M.A. (Loyola), Ph.D. (Stanford)
- Turan, Janet M.** School of Public Health
Department of Health Care Organization and Policy, PhD, Associate Professor
- Turel, Noa** College of Arts and Sciences
Department of Art History, Assistant Professor of Art History, 2012, B.A. (State University of New York), M.A. (University of London), Ph.D. (California-Santa Barbara), Renaissance and Baroque Art
- Turnbough Jr., Charles L.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Microbiology); Bacterial Gene Regulation and Structure/Function of the Bacillus anthracis Exosporium
- Turner, Lori** School of Public Health
Department of Health Education and Health Promotion, Adjunct Professor, UA Health Science
- Turner-Henson, Anne** School of Nursing
Professor of Nursing, 1982, B.S.N. (Medical College of Georgia), M.N. (Emory), D.S.N. (UAB)
- Twieg, Donald B.** School of Engineering
Department of Biomedical Engineering, Professor Emeritus of Biomedical Engineering, 1990, B.A., M.S. (Rice), Ph.D. (Southern Methodist)
- Tyson, Lawrence E.** School of Education
Department of Human Studies, Associate Professor of Counselor Education, 1997, B. A. (Atlantic Christian), M.Ed. (Rollins), Ph.D. (Mississippi State)

- Uddin, Nasim** School of Engineering
Department of Civil, Construction, and Environmental Engineering, Professor of Civil, Construction and Environmental Engineering, 2001, B.S. (University of Engineering and Technology, Bangladesh), M.S. (Oklahoma-Norman), Ph.D. (SUNY Buffalo), P.E. (New York), Structural Engineering, Wind and Seismic Loads, Bridge Design
- Unlap, M. Tino** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Clinical and Diagnostic Sciences); Biotechnology; Recombinant DNA, Protein Chemistry
- Usdan, Stuart** School of Public Health
Department of Health Education and Health Promotion, Adjunct Professor; UA, Health Science
- Uswatte, Gitendra** College of Arts and Sciences
Department of Psychology, Professor of Psychology, 2001, B.A. (Princeton), M.A., Ph.D., (UAB)
- Vaidya, Uday K.** School of Engineering
Department of Materials Science and Engineering, Professor of Materials Science and Engineering, 2001, B.S.M.E. (Karnataka University, India), M.S. (Shivaji University, India), Ph.D. (Auburn), Composites Application Development; Thermoset and Thermoplastic Polymer Matrix Composites; Design, Manufacturing Processing Modeling; Nondestructive Evaluation and Dynamic Response; RD to Commercialization
- Valencia, Karen** College of Arts and Sciences
Department of Forensic Sciences, Instructor; Forensic Toxicology
- Van Groen, Thomas** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Cell Biology; Amyloid angiopathy in cognitive dysfunction and Alzheimer's disease
- Van Matre, Joseph G.** School of Business
Department of Management, Information Systems, and Quantitative Methods, Professor of Quantitative Methods, 1971, B.E.E., M.B.A. (Auburn), Ph.D. (Alabama)
- Van Sant, John E.** College of Arts and Sciences
Department of History, Associate Professor of History, 2000, B.A., M.A. (UC-Davis), Ph.D. (Oregon)
- Van Waardenburg, Robert** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Pharmacology and Toxicology); Drug interaction, cancer pharmacology
- Vance, David** School of Nursing
Associate Professor of Nursing; Ph.D. Program Coordinator, 2004, B.S. (Virginia Tech), M.S. (New Orleans), M.G.S. (Miami), Ph.D. (UAB)
- Vantsevich, Vladimir V.** School of Engineering
Department of Mechanical Engineering, Professor of Mechanical Engineering, 2012, Dip.-Eng., Ph.D. (Belarusian National Technical University, Minsk, Belarus), D.Sc. (State Supreme Attestation Board, Moscow, Russia), Mechatronic Systems Design, Modeling and Control; Manned/Unmanned Ground Vehicle Dynamics and Design; Dynamics and Design of Robotic Manipulators
- Vassilyev, Dmitry** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor (Biochemistry and Molecular Genetics); Crystal structure determination including data collection; modification and improvement of the most widely used crystallographic programs (CCP4, CMS, etc.); and development of original crystallographic software; crystallization of proteins, and protein/protein and protein/nucleic acids complexes
- Vaughan, Laura Kelly** School of Public Health
Department of Biostatistics, Ph.D. (Texas AM), Research Assistant Professor. Genetic Linkage and Association Studies, Population Stratification, Bioinformatics.
- Vaughn, Gregg L.** School of Engineering
Department of Electrical and Computer Engineering, Professor of Electrical and Computer Engineering, 1979, B.S.E.E., M.S.E.E, Ph.D. (Alabama), P.E. (Alabama), Digital Communication, Image Processing, Radiation Effects
- Velu, Sadanandan** College of Arts and Sciences
Department of Chemistry, Assistant Professor of Chemistry, 2002, B.Sc., M.Sc. (Calicut – India), Ph.D. (Madras – India)
- Ver Hoef, Lawrence** School of Engineering
Department of Biomedical Engineering, Associate Professor (Neurobiology), Clinical neurophysiology/neuroimaging and magnetoencephalography
- Vice, John E.** School of Health Professions
Department of Health Administration, Associate Professor (Health Services Administration), Pediatric Medicine Leadership and Governance, Development and Industry Relations
- Vines, Adam** College of Arts and Sciences
Department of English, Assistant Professor of English, 2006, B.A., M.A. (UAB), M.F.A. (Florida)
- Visscher, Kristina** School of Optometry
Department of Vision Sciences, Assistant Professor (Neurobiology)
- Vlachos, Christos C.** School of Dentistry
Department of Clinical Dentistry, Clinical Associate Professor (Orthodontics); Occlusion, Orthodontics, Temporomandibular dysfunction
- Vogtle, Laura** School of Health Professions

Health Focused Patient/Client Management for Physical and Occupational Therapists, Associate Professor of Occupational Therapy, PhD, OTR/L, FAOTA

Vohra, Yogesh K. College of Arts and Sciences
Department of Physics, Professor of Physics, University Scholar, Associate Dean, 1992, B.S., M.S. (Delhi, India), Ph.D. (Bombay, India), High Pressure Materials Research, Growth and Characterization of Synthetic Diamond, and Nanoscale Materials for Biomedical Applications

Voltz, Deborah L. School of Education
Department of Curriculum and Instruction, Professor of Special Education; Dean, School of Education, 2003, B.A. (Evanston), M.A.Ed. (UAB), Ed.D. (Alabama)

Vyazovkin, Sergey College of Arts and Sciences
Department of Chemistry, Professor of Chemistry, 2001, B.M.S., M.A., Ph.D., (Belorussian – Russia)

Wadiche, Jacques College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurobiology; Synaptic transmission and glutamate transporters

Wadiche, Linda College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurobiology; The function of adult generated neurons

Waite, Peter D. School of Dentistry
Department of Clinical Dentistry, Professor (Oral and Maxillofacial Surgery); Orthognathic deformities, Cosmetic facial surgery, Facial reconstruction, Cleft lip and craniofacial disorders, Obstructive sleep apnea

Waldron, Christopher School of Engineering
Department of Civil, Construction, and Environmental Engineering, Assistant Professor of Civil, Construction and Environmental Engineering, 2008, B.S.C.E. (Drexel); M.S.C.E., Ph.D. (Virginia Tech), P.E. (Commonwealth of Pennsylvania), Structural Engineering, Bridge Design, Engineering Mechanics

Waldrum, Michael R. School of Health Professions
Department of Health Informatics, M.D., Professor (Internal Medicine/ Pulmonary Critical Care Medicine)

Walker, Harrison School of Engineering
Department of Biomedical Engineering, Assistant Professor (Neurology), Deep brain stimulation for the management of Parkinson's disease and other movement disorders

Walker, Joe School of Business
Department of Accounting and Finance, Associate Professor of Finance, 1987, B.A., B.S. (Baylor), Ph.D. (Texas AM)

Wallace, Gail College of Arts and Sciences

Department of Sociology, Assistant Professor of Sociology, 2008, B.A. (California-Davis), M.A. (California State- Sacramento), Ph.D. (Iowa State)

Walsh, Peter M. School of Engineering
Department of Mechanical Engineering, Research Professor of Mechanical Engineering, 2002, B.S. (Robert College, Turkey), M.A. (Wesleyan), Ph.D. (Cornell), Carbon Dioxide Sequestration; Combustion in Industrial Furnaces and Electric Utility Boilers; Control of Air Pollutant Emissions from Combustion

Walter, Mark R. College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Associate Professor (Pharmacology); X-ray Crystallography; Molecular Recognition; Signal Transduction; Cytokine Structure and Function

Wan, Mei College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., M.D., Associate Professor; Pathology; Protein degradation mechanisms of tumor suppressor Smad4/DPC4 in cancers

Wang, Hengbin College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Assistant Professor (Biochemistry and Molecular Genetics); Histone modification, in particular, methylation, affects the chromatin-based processes such as transcription

Wang, Jianbo College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Cell Biology; Currently, we are focused on a novel signaling pathway termed planar cell polarity (PCP) pathway and how this pathway regulates morphogenesis in mammals.

Wang, Pengfei College of Arts and Sciences
Department of Chemistry, Assistant Professor of Chemistry, 2005, B.E., B.Sc. (Tsinghua, China), M.S. (Illinois-Chicago), Ph.D. (Wisconsin)

Wang, Qin College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, M.D., Ph.D., Assistant Professor; Physiology Biophysics; Regulation of GPCR cellular responses and in vivo functions

Wang, Shu-Zhen School of Optometry
Department of Vision Sciences, Associate Professor (Ophthalmology)

Wang, Xujing College of Arts and Sciences
Department of Physics, Associate Professor of Physics, 2008, B.S. (NanKai, China), Ph.D. (Texas AM), Theoretical physics; network theory; biophysics; theoretical and mathematical biology; genetics

- Wang, Yu-mei** School of Education
Department of Curriculum and Instruction, Associate Professor of Educational Technology, 2002, B.A. (Harbin Normal – China), Ph.D. (Oregon-Eugene)
- Ward, Walter D.** College of Arts and Sciences
Department of History, Assistant Professor of History, 2010, B.A., M.A., (NCSU), M.A., Ph.D. (UCLA)
- Warner, Daniel** College of Arts and Sciences
Department of Biology, Assistant Professor of Biology, 2012, B.S. (Iowa State), M.S. (Virginia Tech), Ph.D. (Sydney), Ecology and Evolutionary Biology
- Warner, Gary** College of Arts and Sciences
Department of Justice Sciences, Instructor and Director of Research in Computer Forensics, 2007, B.S. (UAB), Digital Forensics, Cybercrime and Security
- Warren, Mary** School of Health Professions
Health Focused Patient/Client Management for Physical and Occupational Therapists, Associate Professor of Occupational Therapy, PhD, OTR/L, SCLV, FAOTA
- Wasko, Molly McLure** School of Business
Department of Management, Information Systems, and Quantitative Methods, Associate Professor of Management; Chair, Department of Management, Information Systems, and Quantitative Methods, 2010, B.B.A., B.A. (James Madison), M.B.A. (Averett), Ph.D. (Maryland, College Park)
- Waterbor, John W.** School of Public Health
Department of Epidemiology, Associate Professor (Epidemiology); Cancer Epidemiology and Control, Injury Epidemiology and Control, Epidemiologic Methods
- Watkins, Charles L.** College of Arts and Sciences
Department of Chemistry, Professor of Chemistry, 1970, B.S. (Alabama), M.S., Ph.D. (Florida)
- Watson, R. Douglas** College of Arts and Sciences
Department of Biology, Professor of Biology, 1988, B.S. (Southern Utah State), Ph.D. (Iowa), Endocrinology and Developmental Biology
- Watts, Stephen A.** College of Arts and Sciences
Department of Biology, Professor of Biology, 1987, B.S. (Auburn), M.S., Ph.D. (South Florida), Aquatic and Marine Biology
- Weatherford, III, Thomas W.** School of Dentistry
Department of Clinical Dentistry, Professor (Periodontics); Chemotherapy of plaque, Clinical trials in Periodontal diseases
- Weaver, Casey T.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; T cell immunology
- Webb, Samuel L.** College of Arts and Sciences
Department of History, Associate Professor Emeritus (History); New South, Alabama, Legal and Constitutional history
- Wech, Barbara** School of Business
Department of Management, Information Systems, and Quantitative Methods, Associate Professor of Management, 2001, B.S. (Wayne State), M.B.A. (Michigan State), Ph.D. (Louisiana State)
- Weech-Maldonado, Robert** School of Health Professions
Department of Health Administration, Professor and L. R. Jordan Endowed Chair (Health Services Administration): Health Disparities, Health Services Research, Long-term Care, Patient Satisfaction
- Weems, Richard** School of Dentistry
Department of Clinical Dentistry, Associate Professor (General Dental Sciences); Dental radiology, Digital radiographic imaging, Diagnostic decision support software
- Weigent, Douglas A.** College of Joint Health Sciences
Department of Biochemistry and Molecular Genetics, Professor; Neuroimmunology
- Weikard, Rudi** College of Arts and Sciences
Department of Mathematics, Professor of Mathematics; Chair, Department of Mathematics, 1990, Ph.D. (Technical University of Braunschweig, Germany), Ordinary and Partial Differential Equations, Mathematical Physics
- Weissman, Norman R.** School of Health Professions
Department of Health Informatics, Ph.D., Professor (Health Services Administration)
- Weller, Rosalyn E.** College of Arts and Sciences
Department of Psychology, Associate Professor (Psychology); Neuroscience, Vision, Obesity, and Brain Imaging
- Wells, Jaclyn** College of Arts and Sciences
Department of English, Assistant Professor of English, 2013, B.A. (Knox), M.A. (Southern Illinois University Carbondale), Ph.D. (Purdue)
- Wenger, Lowell E.** College of Arts and Sciences
Department of Physics, Professor of Physics, 2003, B.S., M.S., Ph.D. (Purdue), Synthesis and characterization of magnetic materials, magnetic nanostructures, and high-temperature superconductors
- West, Andrew B.** College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurology; Genetic and biochemical mechanisms in neurological disorders

Wheeler, Anne P. College of Arts and Sciences

Department of Justice Sciences, Teaching Assistant Professor and Pre-Law Program Director, 2013, J.D. (Harvard), Criminal Law, Procedure and Evidence, Law and Society, Litigation Skills and Strategies, Professional Ethics

Whitehart, David School of Optometry
Department of Vision Sciences, Professor Emeritus (Vision Sciences)

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Department of Biochemistry and Molecular Genetics, Ph.D., Associate Professor; Medicine/Cardiovascular Disease; Oxidant Stress and Endothelial Dysfunction

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Department of Biochemistry and Molecular Genetics, Professor; Herpes simplex virus; varicella zoster virus

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Department of Biology, Professor of Biology, 1993, B.S. (Nebraska), M.S. (Houston), Ph.D. (Texas AM), Reproductive and Conservation Biology

Wick, Timothy M. School of Engineering

Department of Biomedical Engineering, Professor and Chair of Biomedical Engineering, 2005, B.S. (Colorado), Ph.D. (Rice), Tissue engineering and regenerative medicine, Bioreactor design, Drug delivery

Wilkinson, Larrell School of Education

Department of Human Studies, Assistant Professor, 2012, B.S. (Tennessee State University), MSPH, Ph.D. (University of South Carolina), Health Education, Health Disparities/Health Equity, Access and utilization of health care services, Substance Abuse

Willey, Christopher School of Engineering

Department of Biomedical Engineering, Associate Professor (Radiation Oncology), Investigating kinase driven signal transduction cascades in a spectrum of biological systems, Bioinformatics for kinomics and personalized medicine, Systems biology approaches in glioblastoma multiforme

Williams, Anne School of Nursing

Assistant Professor of Nursing, 1994, B.S.N. (Cornell), M.S., Ph.D. (Arizona)

Wilson, Craig School of Public Health

Department of Epidemiology, Professor (Epidemiology); Infectious Disease Epidemiology; International Health and Global Studies

Wilson, Lynda School of Nursing

Assistant Dean for International Affairs; Professor of Nursing, 1997, B.S.N. (North Carolina Chapel Hill), M.S.N. (Delaware), Ph.D. (Tennessee)

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Department of Biochemistry and Molecular Genetics, Ph.D., Assistant Professor; Neurobiology; Mouse Models of Neurodegeneration

Wingate, Martha School of Public Health

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Wingo, Brooks School of Health Professions

Department of Occupational Therapy, Assistant Professor, Research and Advising, Ph.D., MSW

Wolfe, Joseph D. College of Arts and Sciences

Department of Sociology, Assistant Professor of Sociology, 2013, B.A. (Millsaps), M.A. (Indiana), M.S. (Indiana)

Worrell, James L. School of Business

Department of Accounting and Finance, Assistant Professor of Accounting, 2008, B.S., M.Ac., Ph.D. (Florida State)

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Department of Curriculum and Instruction, Associate Professor (Special Education); Emotional and Behavioral Disorders, Collaborative Teaching, Special Education Law

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Assistant Professor (Nurse Anesthesia)

Wright, Rex A. College of Arts and Sciences

Department of Psychology, Professor (Psychology); Social Psychology, Motivation, and Psychophysiology

Wright, Sallie College of Arts and Sciences

Computer Forensics and Security Management, Instructor (Information Technology) Information Assurance and Security

Wu, Hui School of Dentistry

Department of Clinical Dentistry, Professor (Pediatric Dentistry); Biofilm, adhesin, glycosylation, secretion, bacterial pathogenesis

Wu, Jianming College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, D.V.M., Ph.D., Assistant Professor; Medicine; Molecular Immunology and Genetics of Human Autoimmune Diseases

Wyss, J. Michael College of Joint Health Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Cell Biology; Neuroplasticity in aging and neuro cardiovascular control

Xu, Hui College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Associate
Professor (Dermatology, Pathology); contact hypersensitivity,
mechanisms of elicitation

Xu, Nuo School of Business

Department of Management, Information Systems, and Quantitative
Methods, Assistant Professor of Quantitative Methods, 2010, B.S.
(Shanghai Jiao Tong University), M.S., Ph.D. (Cincinnati)

Yacoubian, Talene College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D.,
Neurology; Role of 14-3-3 proteins in Parkinson's disease

Yang, Eddy College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, M.D., Assistant
Professor, Radiation Oncology; the targeting of DNA repair pathways to
enhance the therapeutic ratio

Yang, Qinglin College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, M.D., Ph.D.,
Professor; Nutrition Sciences; exploring molecular mechanisms
underlying the development and progression of heart failure

Yang, Yang College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor
(Pathology); Targeting heparan sulfate for myeloma therapy

Yao, Xincheng School of Engineering

Department of Biomedical Engineering, Assistant Professor of
Biomedical Engineering, 2007, B.S., M.S. (Harbin University of
Technology), Ph.D. (Institute of Physics of the Chinese Academy
of Sciences), Optical imaging of neural function, Optical coherence
tomography

Yates, Stephanie School of Business

Department of Accounting and Finance, Associate Professor of Finance,
2007, B.S., M.A., M.B.A. (Cincinnati), Ph.D. (LSU)

Yeun, Hon School of Health
Professions

Department of Rehabilitation Sciences, Professor and Director of
Research

Yi, Nengjun College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Associate
Professor; Development of statistical and computational methods for
identifying multiple interacting genes for complex traits

Yoder, Bradley College of Joint Health
Sciences

Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Cell Biology; Cilia Signaling and Dysfunction in Development and
Disease

Yoder, Stephen A. School of Business

Department of Marketing, Industrial Distribution, Economics, Assistant
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Program, 2008, A.B. (Duke), J.D. (Northwestern University School of
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Sciences

Department of Biochemistry and Molecular Genetics, Assistant Professor
(Pharmacology and Toxicology); Drug interaction, cancer pharmacology

Yother, Janet College of Joint Health
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Department of Biochemistry and Molecular Genetics, Ph.D., Professor;
Capsular polysaccharides of *Streptococcus pneumoniae*

Young, Martin E College of Joint Health
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Department of Biochemistry and Molecular Genetics, Associate Professor
(Medicine); cardiovascular disease

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Department of Psychology, Associate Professor of Psychology, 2014,
B.A. (Maryville), Ph.D. (Tennessee)

Yu, Pele School of Health
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Department of Health Informatics, M.D., Adjunct Instructor

Yuen, Hon School of Health
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Department of Occupational Therapy, Professor and Director of
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(Dermatology)

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Department of Biochemistry and Molecular Genetics, Associate
Professor; Immunovirology

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Department of Biochemistry and Molecular Genetics, Assistant Professor
(Pathology, Physiology Biophysics); The Role of Calcium Signaling in the
genetic and epigenetic pathogenesis of disease

Zeng, Yanni College of Arts and
Sciences

Department of Mathematics, Associate Professor of Mathematics, 1997,
B.S., M.S. (Zhongshan, China), Ph.D. (New York), Nonlinear Analysis,
Applied Partial Differential Equations

Zhand, Xiao School of Public Health
Department of Biostatistics, Ph.D. (UCLA), Research Assistant
Professor. Bayesian Computation, Clinical Trials.

Zhang, Chengcui College of Arts and
Sciences
Department of Computer and Information Sciences, Associate Professor
of Computer and Information Sciences, 2004, B.S., M.S. (Zhejiang
University, China.), Ph.D. (Florida International)

Zhang, Huang-Ge College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Associate
Professor; Clinical/Translational

Zhang, Jianhua College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Assistant
Professor; Pathology; cell and molecular mechanisms, and mouse
models of autophagy in development, neurological and psychiatric
diseases

Zhang, Kui College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Ph.D., Associate
Professor; Development of methodologies for linkage, disequilibrium,
haplotype, and microarray analysis.

Zhang, Ping School of Dentistry
Department of Clinical Dentistry, Assistant Professor (Pediatric
Dentistry); Immunology, inflammation, periodontitis

Zhang, Yuhua School of Engineering
Department of Biomedical Engineering, Assistant Professor
(Ophthalmology), Advanced retinal imaging technology

Zhi, Degui School of Public Health
Department of Biostatistics, Ph.D. (UCSD), Assistant Professor. Protein
sequence and structure analysis, Bioinformatics, Next-generation
sequencing data analysis.

Zhou, LuFang College of Engineering
Department of Biomedical Engineering, Assistant Professor, Division
of Cardiovascular Disease (Department of Medicine), Pathophysiology
and therapeutics of oxidative stress related to diseases of mitochondrial
origin as it pertains to cardiovascular disease and diabetes

Zhou, Tong College of Joint Health
Sciences
Department of Biochemistry and Molecular Genetics, Professor;
immunotherapy, autoimmune disease

Zhou, Yong School of Engineering
Department of Biomedical Engineering, Assistant Professor, Division of
Pulmonary/Allergy/Critical Care (Department of Medicine), Myofibroblast
differentiation and emphysema

**Zimmerman-Brown,
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Department of Curriculum and Instruction, Instructor of Pre-Professional
Coursework, 2007, B.S. (Alabama State); M.A.Ed., Ed.S., Ph.D (UAB)

Zou, Henghui College of Arts and
Sciences
Department of Mathematics, Associate Professor of Mathematics, 1994,
B.S. (Xiangtan, P.R.C.), M.S. (Peking, P.R.C.), Ph.D. (Minnesota),
Nonlinear Partial Differential Equations, Nonlinear Analysis

Zvanut, Mary E. College of Arts and
Sciences
Department of Physics, Professor of Physics, 1992, B.S., M.S.,
Ph.D. (Lehigh), Electrical studies and EPR studies of insulators and
semiconductors; microelectronics and optoelectronics

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