

Appendix A: Required Nutrition Education

Nutrition – AAMC SCOPE Survey 2024

Indicate whether the following nutrition content areas were included in the required curriculum.

Nutrition Content in the Required Curriculum	Included in REQUIRED Curriculum	Not in the REQUIRED Curriculum
Energy and nutrient requirements across the lifespan	X	
Macro and micronutrients	X	
Food allergies and intolerances	X	
Nutritional intake impact on health, disease, and recovery	X	
Drug-nutrient interactions	X	
Food labels, the health impacts of ingredients	X	
Nutritional screening in patient encounters	X	
Food intake patterns and nutrients of deficit and excess	X	
Patients at risk (e.g., malnutrition, metabolic syndrome, etc.)	X	
Nutrition and diet communications	X	
Counseling models and skills (e.g., behavior change, motivational interviewing, SMART goals)	X	
Interprofessional collaboration in nutrition care (e.g., dietitian)	X	
Breast feeding and complementary feeding practices (e.g., infant nutritional supplements)	X	
Evidenced-based, culturally sensitive, dietary guidelines for patients and populations	X	
Psychological and sociocultural determinants of health related to patient and population nutrition	X	
Community resources (e.g., emergency food provision, meal delivery services)	X	
Nutrition related to health promotion and prevention of disease	X	
Bias and stigma related to nutrition, diet, and weight	X	
Environmental impact of food production and choices on planetary health		X

Considering all the curriculum within your medical degree program that covers nutrition (e.g., basic sciences, clinical care, social and environmental factors), indicate the nature of how nutrition content was integrated.

Within program: theme or themes included as a course or courses (elective or required)

Highlight any unique or innovative aspects of your medical school’s nutrition curriculum. (U) Instructions: E.g., culinary medicine, food as medicine, teaching kitchen, etc. If you list more than one item, please enumerate each item).

- (1) Students engage in nutrition counseling and cooking demonstrations in the community through the Cooking Healthily on a Penny (CHOP) partnership with The East Lake Farmer’s Market, UAB’s Health Alabama 2030, and community health fairs.
- (2) In the MS1 year during the Patient, Doctor, and Society course, students participate in an online Poverty simulation course that focuses on the challenges individuals living in poverty may face and the ways that healthcare professionals can work together to better meet the needs of patients living in poverty.
- (3) In the MS1 year during the Fundamentals of Medicine course, there is an introductory “Nutrition, Health, and Disease” lecture.
- (4) In the MS2 year during the Endocrine course, students participate in a Social Determinants of Health Diabetes flipped classroom Team-Based Learning activity that focuses on diabetes, poverty, insulin, nutrition, diet, and exercise.
- (5) There is a “Poverty” Social Determinants of Health Grand Rounds that articulates why it is important for physicians to know about their patient’s poverty-related social barriers to health and focuses on how to ask patients about poverty-related social determinants of health and how to help patients with poverty-related needs find resources they may need.
- (6) Volunteer opportunity, not curricular: Students enhance motivational interviewing techniques by advising community participants on disease education, exercise, and nutrition through the Dynamic Health partnership with the YMCA, Firehouse Shelter, Salvation Army, and Equal Access Birmingham community clinic.
- (7) Voluntary opportunity, not curricular: Students engage in teaching English-as-a-second-language in communities in partnership with the UAB School of Education.

Required Nutrition Education, Selected Examples, AY 2024-2025

Course: Fundamentals of Medicine Block 1
Topic: **Nutrition, Health and Disease** (Self- Study) (Self-Directed Learning)
Keywords: nutrition, malnutrition, Vitamin C, niacin (Vitamin B3), thiamine, iodine, pellagra, beriberi, goiter, anemia, food fortification, obesity, calories, anthropometric measurement, body mass index, bioelectric impedance analysis (BIA)
Objectives: Student understanding of malnutrition, water-soluble and fat-soluble vitamins, nutrient deficiencies, and nutrition in chronic diseases (obesity, Type 2 diabetes, cardiovascular disease)

Course: Fundamentals of Medicine Block 1
Topic: **Exercise, Health and Disease** (Self- Study) (Self-Directed Learning)
Keywords: exercise, inactivity, metabolic equivalent, chronic non-communicable disease, morbidity, mortality, pluripotent
Objectives: Examine rates of physical inactivity and its long-term consequences. Develop an understanding of best practice recommendations/considerations for general exercise prescription (American College of Sports Medicine, ACSM). Develop an understanding of best practice recommendations/considerations for prescribing exercise in patients with certain chronic disease conditions. Evaluate case-studies with peer team members and develop recommendations for individualized exercise prescription.

Course: Fundamentals of Medicine Block 1
Topic: **Nutrition & Exercise Team-Based Learning** (Team-Based Learning)
Summary: The nutrition and exercise TBL will review four clinical cases for nutrition and exercise counseling. The cases will be based on the following themes 1. Nutrition and Lifestyle counseling for cardiovascular health 2. Type 2 diabetes 3. Cardiovascular risk reduction 4. Obesity in elderly

Course: Fundamentals of Medicine Block 1
Topic: **Metabolism Overview** (Lecture)
Keywords: anabolic, catabolic, ATP, NAD, NADP, FAD, phosphorylation, allosteric, regulation, gene expression, substrate, homeostasis, energy charge, hormones, glycolysis, glucose transport, hexokinase, phosphofructokinase, pyruvate kinase, substrate level phosphorylation, lactate dehydrogenase, aerobic, anaerobic, malateaspartate shuttle, glycerophosphate shuttle, ATP yield
Objectives: Understand the concept of energy homeostasis. Distinguish between anabolic and catabolic metabolic pathways. Appreciate role of ATP, NAD(P)H and co-enzymes in metabolism. Grasp general concepts in regulation of metabolism.

Course: Gastrointestinal
Topic: **Micronutrients** (Lecture)
Keywords: vitamins, minerals, deficiency, toxicity
Objectives: Differentiate water-soluble and fat-soluble vitamins: Identify key clinical clues that predispose to fat soluble vitamin deficiency. List the 13 essential vitamins. Identify key food sources of vitamins and minerals. Identify signs, symptoms, and images of key clinical micronutrient (vitamin and mineral) deficiencies Vitamins A, C, D, E, and K B vitamins: B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate), B12 Calcium Iodine Iron Magnesium Phosphorus Selenium Zinc. Identify key micronutrient toxicities and their clinical presentations.

Course: Gastrointestinal
Topic: **Illness Associated Malnutrition** (Lecture)
Keywords: marasmus, kwashiorkor, re-feeding syndrome
Objectives: Define malnutrition and its severity categories. Recognize risk factors for malnutrition in patients and clinical questions. Identify and document physical exam features consistent with malnutrition and profound weight loss. Compare and contrast Kwashiorkor and marasmus. Compare and contrast sarcopenia and cachexia. Describe the two mechanisms of nutrient delivery (enteral and parenteral)

nutrition), their methods, and their main complications. Describe refeeding syndrome, including mechanism, risk factors, and general management strategies.

Course: Gastrointestinal
Topic: **Nutrition / Palliative Care** (Lecture)
Keywords: Artificial hydration and nutrition, dementia, patient self-determination
Objectives: To list the indications for artificial hydration & nutrition (AHN). To recognize that AHN is not always warranted or helpful at the end of life. To explain the ethical standard for withholding or withdrawing AHN. To appreciate the emotional impact of feeding on patients & families. Relevant Course Objective: Identify and discuss nutritional, psychosocial and economic factors that influence and impinge upon GI related health care at all stages of life

Course: Gastrointestinal
Topic: **Pharmacology of Acid / GERD + Prokinetics** (Lecture)
Keywords: pharmacology, peptic ulcer disease, gastroesophageal reflux disease (GERD), antacids, prokinetics
Objectives: Describe the pharmacology of the drugs used in the prevention and treatment of peptic ulcer disease (PUD) and gastro-esophageal reflux disease (GERD) and state their other uses. Describe the pharmacology of the antacids including their major adverse effects and drug interactions. Explain the pharmacology of drugs used to increase GI motility (prokinetics).

Course: Endocrine
Topic: **Diabetes Type II** (CBCL & Self-Study Prep)
Keywords: Type 1 Diabetes, Type 2 Diabetes, diagnosis, classification, pathophysiology, insulin resistance, beta cell dysfunction, management, sulfonylureas, metformin, thiazolidinediones, DPP-4 inhibitors, GLP-1 agonists, insulin
Objectives: Describe the etiologies of type II diabetes mellitus. Review the pathophysiology of type II diabetes mellitus. Summarize the treatment options for type II diabetes mellitus. Describe the pathophysiology of type 1 diabetes mellitus. Explain the management of type 1 diabetes mellitus. Review other conditions for which patients with type 1 diabetes mellitus are at increased risk of developing.

Course: Endocrine
Topic: **Diabetes Type I** (QAB & Self-Study Prep)
Keywords: insulin, glucagon, basal insulin, bolus insulin, hypoglycemia, diabetic ketoacidosis
Objectives: Describe the pathophysiology of type 1 diabetes mellitus. Explain the management of type 1 diabetes mellitus. Review other conditions for which patients with type 1 diabetes mellitus are at increased risk of developing.

Course: Endocrine
Topic: **Prep for Social Determinants of Health: Diabetes TBL** (Independent Learning & TBL)
Keywords: Social Determinants of Health, type 2 diabetes, diagnosis, classification, pathophysiology, insulin resistance, beta cell dysfunction, management, sulfonylureas, metformin, thiazolidinediones, DPP-4 inhibitors, GLP-1 agonists, insulin
Objectives: Describe pathophysiology of type II diabetes. Describe indications, mechanism of action and common considerations when prescribing metformin and insulin. Practice skills for discussing complex medical concepts with patients with low health literacy. Discuss relative costs of different medications for Type II diabetes. Identify resources for lowering the cost of insulin.

Course: Neurosciences
Topic: **Eating Disorders** (Lecture)
Keywords: eating disorders
Objectives: Understand the diagnostic criteria for the different types of eating disorders. Recognize the clinical presentation for eating disorders and evaluation. Identify medical complications related to eating disorders. Understand multidisciplinary treatment approaches for eating disorders.

Course: Family Medicine Clerkship Core
Topic: **Diabetes Diagnosis and Management (Independent Learning)**
Keywords: diabetes, diabetes mellitus, morbidity and mortality, lifestyle modification, insulin, insulin resistance, oral and injectable medications, quality-marker goals, calorie restriction, exercise, weight loss, obesity, metformin, metabolic, kidney failure, amputation, blindness, heart disease, stroke, epidemiology, screening, gestational diabetes, blood glucose, blood pressure, statin therapy, biguanides, GLP-1 receptor agonists, SGLT-2 inhibitors, DPP-4 inhibitors, thiazolidinediones, sulfonylureas, alpha-glucosidase inhibitors, metformin, A1C, monitoring, diabetic foot exam, GFR, ADA, diabetes screening
Objectives: Understand the serious impact of diabetes. Understand that timely intervention can impact the overall morbidity and mortality. Recognize that lifestyle modification is paramount and achievable. Become comfortable managing diabetes with insulin, and newer oral and injectable medications. Know the quality-marker goals and follow-up.

Course: Medicine Clerkship Core
Topic: **Diabetes Outpatient, Insulin Mgmt, DM Emergencies (Independent Learning)**
Keywords: diabetes, diabetes mellitus, diabetic emergencies, ketoacidosis, insulin
Objectives: Review and describe disease processes and/or management. Understand the role of insulin and insulin therapy. Apply scientific and clinical principles to understanding diabetes, insulin management, and diabetic emergencies. Apply scientific and clinical principles to understanding disease, diagnosis, and treatment, including epidemiology and health disparities.

Course: Family Medicine Clerkship Core
Topic: **Hypertension Diagnosis and Management (Independent Learning)**
Keywords: hypertension, high blood pressure, risk factors, CDC Facts on hypertension, JNC-8 Joint National Committee Guidelines, AHA/ACC Clinical Practice Guidelines, normal blood pressure, elevated blood pressure, hypertension stage 1, hypertension stage 2, prevalence, hypertensive crisis, hypertensive urgency, hypertensive emergency, systolic BP, diastolic BP, blood pressure mechanisms, intravascular volume, autonomic nervous system, renin-angiotensin-aldosterone system, vascular mechanisms, immune mechanisms, inflammation, oxidative stress, blood pressure measurement, basic blood pressure testing, optional blood pressure testing, primary hypertension, alcohol, sodium, diet, lifestyle modification, blood pressure treatment, treatment of hypertension stage 1, treatment of hypertension stage 2, ASCVD, pharmacological interventions, non-pharmacological interventions, DASH diet, weight loss, hypertension-causing medications, hypertension complications, hypertensive cardiovascular disease, hypertensive kidney disease, atherosclerotic complications of hypertension, fixed and modifiable risk factors for hypertension, first-line antihypertensive medications, second-line antihypertensive medications, management of hypertension in diabetes, atherosclerotic cardiovascular disease (ASCVD), diabetes, dyslipidemia, AHA guidelines, ADA guidelines, ACCORD, Management of hypertension in stable ischemic heart disease, Management of hypertension in heart failure, Management of hypertension in chronic kidney disease, Management of hypertension in pregnancy, Management of hypertension in older adults, Management of hypertension in African American populations, Blood pressure measurements in healthcare settings, normotensive, sustained hypertension, masked hypertension, white coat hypertension
Objectives: Describe hypertension and recognize CDC facts on hypertension. Describe the JNC-8 Guidelines on hypertension. Describe the ACC/AHA guidelines for prevention, detection, evaluation, and management of high blood pressure in adults. Describe the management of hypertension in specific conditions.

Course: Family Medicine Clerkship Core
Topic: **Obesity and Dyslipidemia (Case-Based Instruction/Learning)**
Keywords: cholesterol, management, HDL, LDL, risk assessment, risk factors, dyslipidemia, clinical decision making, shared decision making, risk-enhancing factors, diabetes, ASCVD risk, statin, TSH, hypothyroidism, insulin, kidney function, CKD, pharmacology, dosing, smoking cessation, hepatic dysfunction, ALT, statin-induced myopathy, HMG CoA reductase, lipophilic statins, hydrophilic statins, high-intensity statins, low-intensity statins, rate-limiting, cholesterol biosynthesis, medication dosing, medication timing,

cytochrome P450 3A4, rhabdomyolysis, myopathy, statin metabolism, CYP3A4 inhibitors, grapefruit juice, red yeast rice, bioavailability, lipid panel, lipid therapy, lipid profile, obesity, ischemic stroke, triglyceride, gender, pediatrics, screening, risk factors, lifestyle modification, familial hypercholesterolemia

Objectives: Understand cholesterol biosynthesis, HDL- and LDL-cholesterol, and dyslipidemias such as hyperlipidemia. Identify risk-enhancing factors that may contribute to hyperlipidemia or impact drug therapy. Understand how to screen for and evaluate laboratory data for hyperlipidemia. Apply evidence and clinical decision making to evaluate and screen patients with hyperlipidemia. Develop therapy management plans for patients experiencing hyperlipidemia. Understand the mechanisms of action and use of statin therapy to treat hyperlipidemia.

Appendix B: Elective Nutrition Education

Service Learning Electives (embedded in mandatory courses)

Course: Fundamentals
Topic: **Counseling patients about nutrition on a budget- Cooking Healthily on a Penny (CHOP)**
Description: 45 min lecture on teaching about nutrition by Caroline Cohen PhD, RD, LD followed by 2 hours giving cooking demonstrations and teaching nutrition in the community (3 hrs total time)
Objectives: 1. Define motivational interviewing (MI).
2. Describe four processes of MI.
3. Apply MI strategies for behavior change related to nutrition.
4. Understand key components of a nutrition label for managing and preventing chronic disease.
5. Review common methods for portion control.
Participants¹ 39

Course: Renal
Topic: **Counseling dialysis patients about nutrition**
Description: 30 min lecture on nutrition for people with ESRD by Manisha Vaidya RDN, LDN, 30 min workshop on motivational interviewing, followed by 90 minutes teaching dialysis patients about nutrition (3 hrs total time)
Objectives: 1. Define motivational interviewing (MI).
2. Counsel patients on fluid restrictions for dialysis patients
3. Counsel patients on how to choose lower sodium foods
4. Identify foods high in phosphorus and potassium
Participants: 18

Course: Endocrine
Topic: **Counseling patients about nutrition in pre-diabetes**
Description: 30 min lecture on nutrition for people with pre-diabetes by Lizzy Davis, PhD, RDN, followed by 30 min role playing nutrition teaching with a dietetics student, followed by 1-2 hours teaching patients with prediabetes about nutrition (3 hrs total time)
Objectives: 1. Explain the physiology of exercise/diabetes in a way that is understandable to lay people
2. Describe real life challenges to exercise/healthy eating for people with pre-diabetes
3. Counsel a patient using active listening and motivational interviewing techniques
Participants: 17

Clinical Electives

Course: **Pediatric Gastroenterology & Nutrition Clinical Elective (52-407M)**
Topic: Care for patients with gastrointestinal, hepatic, and nutritional disorders.
Description: The major educational objective of this course is to integrate the concepts of pathophysiology with clinical evaluation and management. The student will participate in inpatient and outpatient care of children with gastrointestinal, hepatic, and nutritional disorders. Patient problems commonly presenting to the service include gastroesophageal reflux, chronic abdominal pain, chronic diarrhea,

¹ Unless otherwise specified, this is the number of participants in academic year 2024-2025

constipation, inflammatory bowel disease, upper and lower GI bleeding, pediatric liver disease, undernutrition, dyslipoproteinemia, and obesity. The student will be evaluated on a subjective basis based upon the attending physician's interview with the student and observations of the student's performance. Attend regularly scheduled GI conferences which include Educational conference, Pathology conference, Journal Club, Radiology and Surgery conference

Participants: 9

Co-Enrolled Electives (each is ~ 20 hours)

Course: **Culinary Medicine Co-Enrolled Course (06-424T)**

Topic: Nutrition for health through cooking

Description: The course will consist of 7-11 active learning sessions with cooking and tasting (2-3 hours) and a final project presentation (3 hours) for a total of 25 active course hours. The course is based on the Culinary Medicine Specialists Board module-based curriculum. The active learning sessions will consist of hands-on cooking that illustrates clinical and pathophysiology points from the modules (completed prior to class). Prepared meals will be eaten during discussion of national board-style questions drawn from the module material. Students will cook in teams. The five primary topics are: Disease Implications of Diet: An Introduction to Culinary Medicine; Weight Management, Portion Control, Nutrition Labels; Lipids in Disease: The Impact of Dietary Fats on Health; Hypertension and Nutrition: Low Sodium Diets and Flavor Building; Diabetes Mellitus: Carbohydrates and Nutrition.

Objectives: By the end of the course, students will be able to:

1. Demonstrate basic kitchen safety and knife handling skills.
2. Describe both the Mediterranean and DASH diets, as well as evidence for their use in treating diet-related illnesses.
3. Effectively communicate information about these diets to patients.
4. Describe the purpose of salt in the kitchen, as well as cooking principles of flavor building and balancing without adding sodium.
5. List different types of dietary fats in the body and common sources of these fats.
6. Cook with viable replacements and substitutions for culinary fats.
7. Examine the role of certain carbohydrates in promoting satiety, regulating blood glucose and sustaining energy.
8. Prepare healthier snacks and desserts.
9. Describe the biologic need for dietary proteins, with focus on essential amino acids and their dietary sources.

Participants in AY 23-24: 6

Course: **Community Health Education Co-Enrolled Course**

Topic: Educating patients at community health screenings

Description: The purpose of this course is to increase knowledge about community health education, disparities in health and health care, explore attitudes and behaviors that promote and/or mitigate disparities in health literacy, and develop skills in culturally responsive care. The purpose of this session is to introduce core definitions and concepts related community health and basic recommended screenings for adults according to guidelines.

- Objectives:
1. Understand diagnosis criteria and therapeutic targets for common chronic diseases (i.e., HTN and DM)
 2. Perform motivational interviewing
 3. Educate individuals about their health conditions.

Participants: 13 in fall

Course: **Nutrition in Medicine: Counseling and Current Topics Co-Enrolled Course (06-453)**
Topic: Counseling patients on nutrition
Description: This course is an introduction to discussing nutrition with patients, with a current topics lens. Students will gain an understanding of nutrition assessment and tools to incorporate dietary counseling into medical practice. Students will discuss a variety of nutrition topics relevant to the ambulatory clinical setting, including food access, fad diets, and weight stigma. Students will be given the opportunity to contemplate the vast potential for integration of nutrition into personal health and patient care.
Participants: 20

Special Topics Courses (each is ~ 20 hours over 1 week)

Course: **Introduction to Lifestyle Counseling (STP2365)**
Topic: Counseling on diet and exercise
Description: Content will focus on effective communication strategies and evidence-based lifestyle medicine practices to support patients in maintaining healthy diet and exercise habits. Course activities will include both online, asynchronous and in-person components, such as online modules, facilitated discussions, experiential learning, and brief writing assignments.
Participants: 28

Course: **The Impactful Weight of Treating Beyond the Scale Special Topic (STP2366)**
Topic: Pathophysiology and management of overweight and obesity
Description: This course aims to explore the multi-various complexities associated with living with overweight. Garnering a comprehensive understanding of nutrition sciences and the pathophysiology of overweight is vital to combat obesity. Utilizing self-inquiry of how implicit biases and non-verbal cues, through attitudes and behavior, profoundly shape patient self-efficacy and motivation for change. Providers must transcend beyond traditional medical paradigms. This course endeavors to navigate the intricate interplay between self-reflective awareness, motivational interviewing, patient-food relationships, and treatment to support overweight. Through such actions, learners will gain practical skills to support patient self-discovery for change. By examining this gamut of factors that influence weight management success, students will learn how to employ meaningful conversations necessary to build empathetic patient-provider relationships.
Participants: 3 in fall

Course: **Walking in Diabetic Shoes Special Topic (STP2079)**
Topic: Diabetes self management
Description: This 7-day long exercise develops empathy within learners for those patients with diabetes through the participation in daily activities that individuals with the disease state are often encouraged to conduct by the healthcare team. Goal: To improve empathy for patients with diabetes in hopes of positively altering the learner's professional interactions with this population in the future.

Objectives:

1. Demonstrate ability to perform specific diabetes-related self-management tasks (carbohydrate counting, SMBG via glucometer use, insulin dose calculation, insulin injection technique, and implementation of daily exercise)
2. Identify challenging components of the standard diabetic regimen
3. Consider hindrances associated with long-term continuation of self-management

efforts

4. Develop empathy for those living with diabetes

Participants: 5 in fall

Course: **Diabetes Education Special Topic (STP 10120)**

Topic: Diabetes self management

Description: The student will experience the same type of diabetic instruction that a newly diagnosed diabetic would be expected to learn. This will include, but not be limited to, the following topics: diet, exercise, medications (oral therapy and insulin injections) and their side effects, complications, sick day treatment, and preventative issues. They will observe and participate in both group and individual teaching sessions in both an out-patient and an inpatient setting. They will learn more about the treatment of both type I and type II diabetes mellitus as well as gestational diabetes. During this week, the student will be inherently exposed to some of the economic, social, financial, and medical difficulties of diabetes that real patients face.

Participants: 2 in fall

Extracurricular Nutrition Activities (student-run service activities)
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Group: **CHOP (Cooking Healthily on a Penny)**

Description: Students perform cooking demonstrations and nutrition education at community events

Group: **Equal Access Birmingham Health Education**

Description: Students perform health counseling at MPower free clinic in Birmingham

Participants
in AY 24-25: 15

Group: **Dynamic Health**

Description: Students perform personalized health counseling for uninsured people in the community