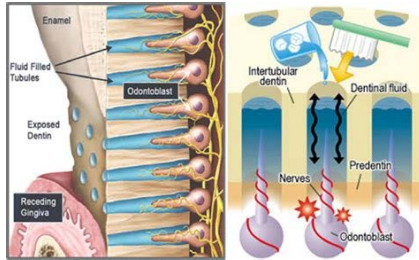
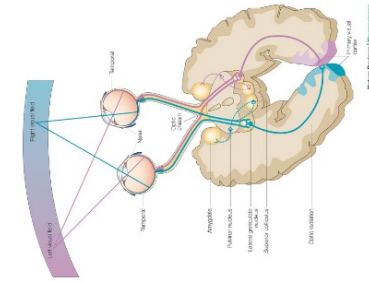


Neuroscience

System 1 Neuroscience OBHS 121
Neuroscience DENT 1255



How we feel pain from our teeth



The eye / brain connection

Course Director: Steven J. Pittler, PhD, FARVO, FAAO

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2023 School Year

Days and Times for the Course: January 3rd – February 20th, 2023

- Mondays - 1:00 pm – 2:50 pm
- Tuesdays - 8:00 am – 9:50 am
- Wednesdays - 1:00 pm – 2:50 pm (Week 2, Dentistry only)
- Thursday – 1:00 pm – 2:50 pm (Week 1 only, no class, weeks 2-8)
- Fridays - (Week 1: No Class; Weeks 2-3: 10:00 am – 11:50 am (Week 2, Optometry only); Week 4: 9:00 am – 11:50 am; Week 5: 10:00 am – 11:50 am; Weeks 6-7: 9:00 am – 11:50 am)

Class Locations: Volker Hall (satellite locations as needed) and VH Histology Labs

Recommended References:

- *Nolte's The Human Brain: An Introduction to its Functional Anatomy*, 7th edition by Todd Vanderah and Douglas Gould PhD, (Elsevier; ISBN 9781455728596) (<https://www-clinicalkey-com.ezproxy3.lhl.uab.edu/#!/browse/book/3-s2.0-C2018000609X>)
- *Principles of Neurobiology*
by Liqun Luo, (Garland Science; ISBN 9781317553830) (available online - rent or used under \$40)
- University of Washington: Digital Anatomist: Interactive Brain Atlas
<http://da.biostr.washington.edu/da.html> - click on Brain atlas (<http://da.si.washington.edu/cgi-bin/DA/PageMaster?atlas:Neuroanatomy+ffpathIndex/Splash%20Page+2>)

Exam Schedule (note locations):

- Exam I – Tuesday, January 17th (Location: VH-D)
- Exam II – Monday, January 30th (Location: VH-B)
- Exam III – Wednesday, February 8th (Location: VH-B)
- Exam IV - Monday, February 20th (Location: VH-B)

Course Philosophy:

The course provides Dental and Optometry students with a balanced basic science view of the structure and function of the nervous system. The course is designed to prepare students for future clinical courses and provide them with a working knowledge of the structure and function of the nervous system with perspectives that range from molecular to behavioral. The inclusion of relevant Clinical Correlations (see C.C. on lecture schedule) is designed to facilitate the students' understanding of the function of the normal nervous system and to introduce clinical neurosciences.

Course Objectives:

Students will be able to describe and relate the structure and function of the normal mature and developing nervous system and specifically...

- identify the basic cellular and molecular processes of neurons and glia.
- describe the functional organization of the pathways in the nervous system that mediate sensory input, central integration, and decision-making and motor output.
- form an integrated understanding of normal and abnormal behavior based on molecular, cellular and systems neuroscience.
- recognize the genetic and environmental mechanisms that control the normal development of the nervous system and regulate the response of the nervous system to injury or disease.

Course Description:

The course will consist of:

- Didactic basic neuroscience and neuroanatomy lectures
- Neurological and psychiatric clinical correlations
- Virtual and gross neuroanatomy labs (open book, work alone neuroanatomy exam)
- 4 modular closed book multiple-choice exams (work alone)
- 5 take-home open book multiple-choice tests (group/teamwork)

Take-home tests:

Take-home test	Start	Due	
Take-home test I	Wed, Jan 4 th	Wed, Jan 11 th	Brain and spinal cord neuroanatomy
Take-home test II	Wed, Jan 18 th	Tue, Jan 24 th	Cellular and molecular properties of neurons and glia
Take-home test III	Tue, Jan 24 th	Wed, Feb 1 st	Sensory systems
Take-home test IV	Wed, Feb 1 st	Fri, Feb 10 th	Motor systems
Take-home test V	Fri, Feb 10 th	Fri, Feb 17 th	Limbic systems and cognition

Open book group work. All keys for Take-home tests will be available at 8 am, the morning after the deadline.

Grading:

Gross Brain Lab Exam: 10% (Starts Jan 13th, 2022; Due: Jan 19th, 2022); open book, work alone
 Exams I-IV: 80% (20% each; see dates below—Jan 17th, 30; Feb 8th, 20); closed book, work alone
 Take-home tests I-V: 10% (2% each); open book, group work

Letter grade for final course averages will be assigned as follows:

- A 90 or above
- B 80 - 89
- C 70 - 79
- F below 70

Incomplete and Student-Initiated Withdrawals:

These matters will be handled in the student's corresponding professional program according to the rules and regulations governing these programs and university policy where it applies.

Honor Code:

All faculty in this course strongly respect the Honor Code as set forth by the Schools of Dentistry and Optometry. No discussion of the examination will be permitted by faculty or students until the exam/test has ended. There is to be no use by students of materials from previous years.

DSS Accessibility Statement:

UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration, and procedures. Requests for reasonable accommodation involves an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. To contact Disability Support Services, please call **205-934-4205** or visit <http://www.uab.edu/dss> or the Hill Student Center Suite 409.

Title IX Statement:

UAB is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct, we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit <http://www.uab.edu/titleix> for UAB's Title IX Policy, UAB's Equal Opportunity, Anti-Harassment Policy and Duty to Report and Non-Retaliation Policy.

Diversity and Inclusion Statement: (adapted from “Diversity and Inclusion – Put It in the Syllabus!” Tomorrow's Teaching and Learning Message Number: 1625, written by Prof. Monica Linden (Neuroscience, Brown University) and Mary Wright, Ph.D. (Sheridan Center for Teaching and Learning, Brown University)

In an ideal world, science would be objective. However, much of science is subjective and is historically built on a small subset of privileged voices. In this class, we will make an effort to acknowledge this privilege and address diversity within Neuroscience, but limits still exist on this diversity. I acknowledge that it is possible that there may be both overt and covert biases in the material due to the lens with which it was written, even though the material is primarily of a scientific nature. Integrating a diverse set of experiences is important for a more comprehensive understanding of science. We will intermittently discuss diversity in neuroscience as part of the course. Furthermore, I would like to create a learning environment for you that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.). To help accomplish this:

- If you have a name and/or set of pronouns that differ from those that appear in your official UAB records, please let me know.
- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me.
- As a participant in course discussions, you should also strive to honor the diversity of your classmates.

I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class by me or another student that made you feel uncomfortable, please talk to me about it.

Lecture Schedule:

Text chapters denotation based on books:

- Nolte's Anatomy-just numerated (e.g., 1, 2, etc.)
- *Principles of Neurobiology* - lettered "L" and numerated (e.g., L1, L2, etc.)

Color Key of Activities in Course Schedule:

Code, Color (RGB)	Activity corresponding to color
1=white (255, 255, 255)	Anatomy / Physiology & Pharmacology lectures
2=green (153, 204, 0)	Clinical correlation lectures
3=lt. brown (207, 176, 113)	Main exams (closed book, work alone)
4=orange (255, 102, 0)	Take-home tests (open book, group work)
5=yellow (255, 255, 0)	Open – Study hours (no class)
6=lt. blue (156, 194, 229)	Anatomy exam (open book, work alone)
7=light purple (191, 149, 223)	Dr. Pittler is out of town, will be present by Zoom

Lect. #	Date	Time	Title	Lecturer	Text Chapters (Exam due dates) Color codes
Week 1 (All lectures in VH-B)					
I	Gross Anatomy of Brain and Spinal Cord				
1a	Tue Jan 3	8:00-8:20 AM	Overview	Steven Pittler*	- 1
1b	Tue Jan 3	8:20-9:00 AM	Introduction to Virtual Brain Lab	Inga Kadisha*	UW Web
2	Tue Jan 3	9 AM	Cytology	Robin Lester*	1, L1
3	Wed Jan 4	1 PM	Spinal Cord	Robin Lester*	10 Take-home I (DUE Wed, Jan 11) - 4
4	Wed Jan 4	2 PM	Brainstem I	Robin Lester*	11, 12
5	Thu Jan 5	1 PM	Brainstem II	Robin Lester*	10-12, 16, 23
6	Thu Jan 5	2 PM	Diencephalon (Thalamus/Hypothalamus)	Robin Lester*	
7	Fri Jan 6	10 AM-noon	Open-Study hour (no class)	No lecturer	No chapters 5

Week 2 Anatomy & Development (All lectures in VH-B, Brain Labs in locations noted below)						
8	Mon Jan 9	1 PM	Gross Brain		Will Brooks*	3, 4, 5
9	Mon Jan 9	2 PM				
10	Tue Jan 10	8 AM	Development		Anne Theibert*	6
11	Tue Jan 10	9 AM	Stroke & Cerebral Circulation		Craig Powell*	2, L7
12	Wed Jan 11	1 PM	Brain Anatomy (class is in the Histology labs)	Dental ONLY VH-G124 VH-G126 VH-G131	Kadisha*, Barger*, Visscher*, Lester*, Powell*, Brooks*	Virtual Lab Guide
	Wed Jan 11	2 PM				
13	Fri Jan 13	10 AM	Brain Anatomy (class is in the Histology labs)	Optometry ONLY VH-G124 VH-G126 VH-G131	Kadisha*, Garnett*, Edwards*, Powell*, Brooks*, Visscher*	Anatomy EXAM (<u>open book</u> , work alone ; 6 opens at 5 PM Jan 13, closes on Jan 19 11:59 PM)
	Fri Jan 13	11 AM				

	Week 3 (See each day for locations)				
II	Cellular Neurophysiology				
	Mon, Jan 16, MLK Day (Holiday) Location – Everywhere				
14	Tue Jan 17	8-10 AM	Exam 1 (Sessions 1-13) [VH-D]	Steven Pittler*	Exam I [3]
15	Wed Jan 18	1 PM	Resting Potential, Action Potential & Propagation (VH-B)	Jacques Wadiche*	7 ' L 2 Take-home II (DUE Tues, Jan 24) [4]
16	Wed Jan 18	2 PM	Synaptic Transmission & Receptors	Jacques Wadiche *	8, L3
17	Fri Jan 20	10 AM	Local Anesthetics (1VH-C; 2VH-D)	Prentiss Lawson*	CC [2]
18	Fri Jan 20	11 AM	General Anesthetics	Paul Piennette*	CC [2]

Week 4						
III	Sensory – Motor Systems (See each day for locations)					
19	Mon Jan 23	1 PM	Somatosensory (VH-B)	Robin Lester*	9, L6	
20	Mon Jan 23	2 PM	Cerebellum	Robin Lester*	20	
21	Tue Jan 24	8 AM	Early Visual Processing (VH-B)	Timothy Gawne*	17, L4	
22	Tue Jan 24	9 AM	Higher Visual Processing	Timothy Gawne *	1 7 , L 5	Take-home III (DUE Wed, Feb 1) 4
23	Wed Jan 25	1 PM	Epilepsy (VH-B)	Jennifer DeWolfe*	CC 2	
24	Wed Jan 25	2 PM	Autism	Cassandra Newsom*	CC 2	
25	Fri Jan 27	9 AM	Spinal Reflexes (1VH-D; 2HPB)	Scott Wilson*	10, L8	
26	Fri Jan 27	10 AM	Descending Motor	Lingyong Li*	18, L8	
27	Fri Jan 27	11 AM	Review of Sensory Transduction	Lingyong Li*	9	

Week 5 Sensory Systems (See each day below for locations)						
28	Mon Jan 30	1-3 PM	Exam 2 (Sessions 15-27) (VH-B)	Steven Pittler*	Exam II 3	
29	Tue Jan 31	8 AM	Auditory (VH-B)	Robin Lester*	14, L6	
30	Tue Jan 31	9 AM	Taste & Smell	Robin Lester*	13, L6	
31	Wed Feb 1	1 PM	Vestibular (1VH-D; 2VH-C)	Julie Quinet*	1 4	Take-home IV (DUE Fri, Feb 10) 4
32	Wed Feb 1	2 PM	Oculomotor	Julie Quinet*	21	
33	Fri Feb 3	10 AM	Pain (1VH-D; 2VH-C)	Jennifer De Berry*	9	
34	Fri Feb 3	11 AM	Clinical Pain & Analgesics	Jennifer De Berry*	CC 2	

Week 6 (All lectures and Exam III are in VH-B)						
35	Mon Feb 6	1 PM	Basal ganglia – Parkinson’s Disease	Marissa Dean*	CC	2
36	Mon Feb 6	2 PM	Huntington’s Disease	Marissa Dean*	CC	2
37	Tue Feb 7	8 AM	Open-Study hour (no class)	No lecturer	Exam III Study	5
38	Tue Feb 7	9 AM	Open-Study hour (no class)	No lecturer	Exam III Study	5
39	Wed Feb 8	1-3 pm	Exam III (Sessions 29-38) (VH-B)	Steven Pittler*	Exam III	3
IV Autonomic and Neuroendocrine Function						
40	Fri Feb 10	9 AM	Neuroendocrine / Hypothalamus	Shawn Galin*	10	Take-home V (DUE Fri, Feb 17)
41	Fri Feb 10	10 AM	Synaptic Plasticity	Jacques Wadiche*	23, L10	
42	Fri Feb 10	11 AM	Learning and Memory	Michael Wyss*	23, L10	

Week 7 (All lectures in Week 7 and Exam IV, Week 8 in VH-B, EXCEPT Fri. Feb. 17 in VH-D)					
43	Mon Feb 13	1 PM	Headache and Facial Pain	Robert Pearlman*	CC [2]
44	Mon Feb 13	2 PM	Sleep Disorders	Jennifer De Wolfe*	CC [2]
45	Tue Feb 14	8 AM	Alzheimer's Disease	David Geldmacher*	CC, L11 [2]
46	Tue Feb 14	9 AM	Multiple Sclerosis	Stephen Benesh *	CC [2]
V	Behavior and Cognition				
47	Wed Feb 15	1 PM	Motivation, Reward & Addiction	Jeremy Day*	23
48	Wed Feb 15	2 PM	Autonomic	Lingyong Li*	10
49	Fri Feb 17	9 AM	Schizophrenia (1VH-D; 2VH-C)	Scott Pruett *	CC [2]
50	Fri Feb 17	10 AM	Circadian Rhythms / Sleep	David Resuehr*	22
51	Fri Feb 17	11 PM	Higher Cognitive Function	Elaine Mahoney*	22, L11
Week 8					
52	Mon Feb 20	1-3:00 pm	Exam IV (Sessions 40-51) (VH-B)	Steven Pittler*	Exam IV [3]
	May 5 to May 8 in BlazerNet		NOTE: Expect Final Grade Submission into BlazerNet/Banner	BlazerNet (within a week of Exam IV grades to be posted)	

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Color	Activity corresponding to color
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2=green	Clinical correlation lectures
3=lt. brown	Main exams (closed book)
4=orange	Take-home tests (open book)
5=yellow	Open – Study hours (no class)
6=blue	Gross EXAM (open book)

Faculty (30+2) and Staff (3) Contact Information:

Faculty name, degree:	Department:	Bldg, room:	Office phone:	E-mail:	Lecture(s) #:
Bradley Barger, PhD	CDIB	VH 609	4-5051	jbbarger@uab.edu	12
William Brooks, PhD	CDIB	VH 611	4-7596	wbrooks@uab.edu	8, 9, 12, 13
Jeremy Day, PhD	Neurobiology	SHEL 911	6-6076	jjday@uab.edu	47
Jennifer DeBerry, PhD	Anesthesiology	BMR2 322	4-4668	jenjdeb@uab.edu	33, 34
Stephen Benesh, MD	Neurology	SC 440	4-2402	fbenesh@uabmc.edu	46
Marissa Dean, PhD	Neurology	SC360C	5-8314	mndean@uabmc.edu	35, 36
Jennifer DeWolfe, DO	Neurology	CIRC 312	4-3866	jdewolfe@uab.edu	23, 44
Danielle Edwards, PhD	CDIB	VH 219	4-6379	dned222@uab.edu	13
F. Shawn Galin, PhD	DOM	VH 338	4-6687	galin@uab.edu	40
Colleen Garnett, PhD	CDIB	VH 613	5-0062	cb28@uab.edu	13
Timothy J Gawne, PhD	Optom. Vis. Sci.	WORB 664	4-5495	tgawne@uab.edu	21, 22
David Geldmacher, MD	Neurology	SC 640	6-3679	dgeldmacher@uab.edu	45
Inga Kadisha, PhD	CDIB	VH 218	4-2812	ikadisha@uab.edu	1b, 12, 13
Prentiss Lawson, MD	Anesthesiology	JT 8th	4-6501	pilawson@uab.edu	17
Robin Lester, PhD	Neurobiology	SHEL 1075	4-4483	nicotine@uab.edu	2-6, 12, 19, 20, 29, 30
Lingyong Li, PhD	Anesthesiology	PBMR 3rd	4-4321	lingyongli@uabmc.edu	26, 27, 48
Elaine Mahoney, PhD	Phys. Med. Rehab.	SRC 530	4-3454	emahoney@uabmc.edu	51
Cassandra Newsom, PhD	Neurobiology	CIRC 132E	4-2352	newsomcr@uab.edu	24
Robert Pearlman, MD	Neurology	HGLD 400	930-8300	robertp@uab.edu	43
Steven Pittler, PhD	Optom. Vis. Sci.	VH 375B	205-612-9720 (c)	pittler@uab.edu	1, 14, 28, 39, 52
Paul Piennette, MD	Anesthesiology	JT 9 th	4-6525	ppiennette@uabmc.edu	18
Craig Powell, MD, PhD	Neurobiology	SHEL 1010	214-562-1288 (c)	craigpow@uab.edu	11-13
Scott Pruett, MD, PhD	Psych - Adult	CIRC 593A	4-2144	bspruett@uabmc.edu	49
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Jacques Wadiche, PhD	Neurobiology	SHEL 10	6-6413	jwadiche@uab.edu	15, 16, 41
Scott Wilson, PhD	Neurobiology	SHEL 9	5-5573	livvy01@uab.edu	25,
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Connie Sewell	Optometry	HPB 124F	5-9930	csewell@uab.edu	Director, Student Affairs
Mark Crawford, MBA	Optometry	HPB 109	6-1341	mcra@uab.edu	Program Manager

Notes:

Thank you for reading the entire syllabus! 😊



UAB Dentistry and Optometry
Professional Programs



Neuroscience Course Syllabus: Spring 2023

Notes: