Georgia Institute of Technology
School of Biological Sciences

BIOS 4400/APPH 6400 - Human Neuroanatomy

Instructor:
Dr. Lewis A. Wheaton, 555 14th Street, Room 1309E
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Guest lecturer:
Dr. T. Richard Nichols - trn@gatech.edu

TA: Shea McMurtry - smcmurtry3@gatech.edu

Office Hours: Dr. Wheaton - By Appointment
Dr. Nichols – By Appointment
Shea McMurtry – Friday, 10-11a via bluejeans
(https://gatech.bluejeans.com/599999321)

Assigned Text: Atlas of Functional Neuroanatomy, 3rd edition (Hendelman)
ISBN 9781466585348

While this text is not emphatically required, it really is a good idea to find a copy. **All readings will come from chapters in this text.** Another option is Human Neuroanatomy: an introduction (James R. Augustine; ISBN-10: 0470961619, there is also a 1st edition that will be cheaper and reasonably adequate). **Occasionally different texts and references use slightly different terms to define the same anatomical structures, so caution is given to branching out too wide. You will be evaluated based on what is presented in this class.**

Class Location: Paper Tricentennial 109 and https://bluejeans.com/547445109
Class Time: **TTH – 2:00-3:15**

General Course Description: The purpose of this course is to learn the anatomical makeup of the human nervous system. In this course we will closely examine details of central and peripheral neuroanatomy with links to function where appropriate. As well, occasional comparisons with non-human vertebrate neuroanatomy will be made. We will also regularly link clinical and research perspectives into lectures. The study of human neuroanatomy can be a challenge, but will be a challenge worth the effort. The expected outcome of this course is to have a very firm knowledge of human neuroanatomy and have a very strong familiarity of the overall architecture and integration of the nervous system.

Course Objectives:
1. Understand and identify key pathways within the central and peripheral nervous systems
2. Articulate how neural pathways deliver and integrate sensory and cognitive information for a variety of human behaviors

3. Understand basic clinocoanatomical correlates of nervous system dysfunction

This course will be taught in person/residential. However, a LIVE stream will be provided. There is no guarantee that the lectures will be recorded for later viewing.

Expectations: In general, I expect that by the end of the course you will have the ability to appreciate the integration of the human nervous system, and be able to understand how systems interact to produce behavior.

Use of Electronics: You may use electronics during the class sessions for course-relevant purposes. You may NOT have any electronics (or peripherals, such as headphones) out during in person exams. If you use them during in person exams, you forfeit the exam.

Use of Internet Resources: It is very common to utilize the internet as a study aid. However, neuroanatomy is a study that has naming conventions that are a bit nuanced, and can depend on the source of the information. ***It is highly recommended to only utilize the notes and the recommended text in your studies.*** Various websites utilize older and/or geographic specific naming convention that can be very confusing and lead to errors.

Recordings of Class Sessions and Required Permissions: Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course.

Course Grading:

	Undergraduate
Exams (3)…….……	10% each (30% total)
*Case Summaries..…….……	10% each (50% total)
Case summary participation ……	20% total
Total	100%

Case summaries:* these will be regularly scheduled group homework assignments, which will be clinical or behavioral sets based on lecture material. You will be arranged into small groups to work on the problem sets together. For cumulative grading case summaries will account for 50% total. Peer evaluation of these case summaries accounting for 10% of the final grade will be based on a confidential, cumulative peer-assessment of your participation in ALL of the group work, assessed at the end of the semester. The final case summary will be cumulative, and account for 20% of the grade. All summaries are due before the start of class. **If a summary is submitted late, it will not be accepted, and your group will receive an F for that assignment.

	Graduate
Exams (3)…….……	5% each (15% total)
*Case Summaries..…….……	10% each (50% total)
*Topic review summary……...	20%
Case summary and topic review participation…..……	15% total
Total	100%

Case summaries: these will be regularly scheduled group homework assignments, which will be clinical or behavioral sets based on lecture material. You will be arranged into small groups to work on the problem sets together. For cumulative grading case summaries will account for 50% total. Peer evaluation of these case summaries accounting for 15% of the final grade will be based on a confidential, cumulative peer-assessment of your participation in ALL of the group work, assessed at the end of the semester. All summaries are due before the start of class. **If a summary is submitted late, it will not be accepted, and your group will receive an F for that assignment.**

Topic review summary: graduate students will be provided a paper at the beginning of the semester that will be the prompt for debate and discussion for the duration of the semester. Students will use online discussion format to facilitate discussion and debate. A final empirical outline of the discussion/debate will be submitted at the end of the semester. More details will be provided in a separate meeting of the graduate students at the beginning of the semester.

Group assignments:
Case summaries will be done in groups of 5-6 people. If you have preferred groups, please accomplish this by Friday afternoon of the first week and contact Shea McMurtry (smcmurtry3@gatech.edu) with your preferred group arrangement. If we do not hear from you by Friday at 4:00pm of first week, you will be placed in a group at the instructor's discretion. Do note that group preference is not binding and adjustments will be made at the instructor's discretion. As well, groups may or may not change throughout the semester, at the instructor's discretion.

Graduate students will all be in 1 or 2 groups.

Important assignment information:
If you miss a case study or exam deadline, it cannot be made up.

ALL EXAMS WILL BE ONLINE and can be done remotely. They will be open book/notes and can be accomplished working in pre-designated groups. More details will be provided as we get closer to Exam 1.

If you miss an exam (with no ***prior arrangement***) the exam ***cannot*** be made up.

Make up exams (with **confirmed** arrangement prior to the exam) may be given at the discretion of Dr. Wheaton, upon receipt of appropriate verification of absence. Confirmed arrangement means that Dr. Wheaton must verify the arrangement prior to the start of the exam. Confirmation must come through the Dean of Students Office.

Information Related to Covid-19:

This syllabus is subject to change.

This continues to be an unprecedented time. As a community, we all agree that the best way for you to learn is face-to-face. If we are required to move to an online format because of a Covid outbreak, we are able to help you learn the course content remotely. Whether we meet in-person versus remotely could change depending upon health status of individuals in classroom. You have a definite stake in your personal health and the community's health.

Masking is strongly encouraged in the classroom.

Our expectation is that everyone who is eligible will be vaccinated; vaccination significantly reduces likelihood of severe disease, including from the delta variant of SARS-CoV-2. Because the delta variant can be spread by vaccinated individuals, we also expect that everyone who is able to should wear a mask, correctly covering mouth and nose, when indoors. Both of these expectations are based on current CDC guidance. As that guidance is updated, we will communicate any new expectations.

Weekly asymptomatic surveillance testing should be part of everyone's regular routine, regardless of vaccination status. Details are here: https://health.gatech.edu/coronavirus/testing.

Students are expected to be familiar with and abide by the Institute guidelines, information, and updates related to Covid-19. Find campus operational updates, Frequently Asked Questions, and details on campus surveillance testing and vaccine appointments on the https://health.gatech.edu/tech-moving-forward**.**

Please sit in the same seat each class session. If there are concerns in class related to Covid-19, you may be contacted by campus contact tracers. For more information, see https://health.gatech.edu/coronavirus/contact-tracing

Students may not record or share the materials or recordings, including screen capturing or automated bots, unless the instructor gives permission. Digitally proctored exams may require students to engage the video camera, but those recordings will not be shared with or disclosed to others without consent unless legally permitted.

Dean of Students Office, CARE Center, Counseling Center, Stamps Health Services, and the Student Center

The **CARE Center** and the **Counseling Center**, Stamps Health Services, and the Dean of Students Office will offer both in-person and virtual appointments. Student Center services and operations are available on the **Student Center** website. For more information on these and other student services, contact the Dean of Students or the **Division of Student Life**.

Academic integrity: Students are expected to abide by the Honor Code (http://honor.gatech.edu/). The objective of the honor code is "to prevent any students from gaining an unfair advantage over other students through academic misconduct". It is the instructor's understanding and expectation that the student's written or signed name on any assignment, quiz, or test means that the student contributed to the assignment in question and that they neither gave nor received unauthorized aid. Please ask me directly if you are unclear about expectations. All cases of potential academic misconduct will be reported to the Dean of Students.

Plagiarism will not be acceptable on any assignment and will result in Failure of the assignment and reporting to the Dean of Students office.

Academic accommodations: If you need teaching or learning accommodations in order to do well in this course, you must register with the Georgia Tech Office of Disability Services (https://disabilityservices.gatech.edu/). According to their guidelines, you must make an appointment to talk with me one-on-one. I am very happy to make accommodations that I am allowed to make because I want every student to be successful in this course. However, I will not make

accommodations without proper documentation, registration, and notification via the Office of Disability Services.

Absence Policy: Students are responsible for all material covered in their absences, and they are responsible for the academic consequences of their absences (http://catalog.gatech.edu/rules/4/). Excusable absences include emergency medical treatment, family emergencies (such as death in the family), approved institute activities (such as student athlete travel) and job interviews. Manufacturing a false excuse is a violation of the Honor Code. In the event of any such excusable absence, please provide documentation to the instructor before, or upon returning to class. If no documentation is provided the absence will be considered unexcused.

Semester Schedule

Week	Date	Topic	Readings	Assignments
1	8/24	Overview, Anatomical orientation, Imaging the nervous system	Ch 1	
	8/26	Neural development, bony structure		
2	8/31	Forebrain and CNS architecture	Ch 1	
	9/2	Meninges and CSF	Ch2 p 28-32; Ch7 p166-171;	
3	9/7	Brainstem and cranial nerves	Ch3 58-67	
	9/9	Spinal cord, Guest Lecture, Dr. Richard Nichols	Pg 76, 80 Pg 110-119	**Case summary DUE -theme – development**
4	9/14	Receptors and Reflexes, Dr. Nichols		
	9/16	Sensory Pathways/Receptors, Dr. Nichols	Ch 5 96-114	
5	9/21	**EXAM 1**		
	9/23	Reticular Formation – nuclear groups and neurotransmitters	Ch3 (p68-71)	
6	9/28	Reticular Formation - homeostatic regulation		
	9/30	Thalamus 1 – general anatomy	Pg 88-91	
7	10/5	Thalamus 2 – ascending and descending connectivity		**Case summary DUE -theme – RF/thalamus**
	10/7	Auditory System	Ch6 (p138-44)	
8	10/12	**FALL BREAK**		
	10/14	Vestibular System, Guest Lecture, Dr. Nichols	Ch6 (p152-154)	
9	10/19	Visual system and reflexes	Ch6 (p144-151)	
	10/21	Olfaction and Gustation Systems		
10	10/26	**NO CLASS**		**Case summary DUE -theme –integration**
	10/28	**Structured review – details TBD**		
11	11/2	**EXAM 2**		
	11/4	Cerebellum and Deep Cerebellar Nuclei	Ch3(72-75)	
12	11/9	Basal ganglia 1, Guest Lecture, Shea McMurtry	Pg 40-43; 128-137	
	11/11	Basal ganglia 2, Shea McMurtry	Pg 206; 232-33	
13	11/16	Limbic System and Hypothalamus		**Case summary DUE -theme –motor system**
	11/18	Neuroendocrine and Behavioral Regulation, Shea McMurtry	Ch 9 & 10	
14	11/23	Autonomic Nervous System, Dr. Nichols	Ch 9 & 10	
	11/25	**Thanksgiving Break**		
15	11/30	White matter tracts	Ch2(29-40)	
	12/2	Cerebral vasculature	Ch8	**Case summary DUE -theme - regulation**
16	12/7	Neuropathology and degenerative disease		
17	12/14	FINAL – 2:40 – 5:30		