SYALLABUS for FUNCTIONAL NEUROANATOMY HONORS PRACTICUM, SPRING 2018

NROSCI 1111 - 1060 31283, SPRING TERM, 2018
M 1:00-4:00, 180 Crawford Hall

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Course description

This course is devoted to improving your understanding of the functional organization of the human central nervous system using a "hands-on" approach. There is no better way to get familiar with the brain than to hold one in your hands! You will hold many in this course. We will use human brain specimens to investigate the structure of the human brain, with an emphasis on understanding it in three dimensions. Additionally, students will learn how to create 3D computer models of selected brain structures and will have them printed using Pitt's 3D printers (no prior 3D modeling or 3D printing experience necessary -- promise!). Finally, we will learn about brain imaging technologies (e.g. MRI, CT, PET) and how to know what you see in these images, as well as modern neuroanatomical techniques used in both clinical and research settings.

Course materials

Lab manual documents and slide presentations will be available on CourseWeb, and I recommend you print these out and bring them to class so you can take notes on them. Additionally, during the term, I will put names of and links to resources you can use to study the neuroanatomy we cover. In the lab, The Brain Atlas, 2nd Edition (Woolsey et al.; Fitzgerald Science Press), is available.

CourseWeb will be used to post course announcements, as needed. Important announcements may also be sent to your university email account (name@pitt.edu). *Announcements, information, course changes, and documents posted to CourseWeb are REQUIRED content for the course (unless you are told otherwise)* ***so please check the CourseWeb page often****.* Any official email communications regarding this course will be delivered to students' University of Pittsburgh email address, in accordance with the University of Pittsburgh email communication policy: http://www.bc.pitt.edu/policies/policy/09/09-10-01.html. Students who wish to forward their Pitt email to another account do so at their own risk.

Course content and exam schedule

The course material and exam schedule is on the last page of this syllabus. Please note that the material we cover in each class may vary slightly, depending on the duration of lectures, class discussions, etc. Exams will only include material we have covered prior to the exam date.

Course Grades

Your course grade will be based on:

Practical exam (35%): This practical exam will utilize the human brain specimens and images taken using the brain imaging modalities we discuss. You will be expected to identify brain structures, answer basic questions about their connections, and to address issues relating to the functions of regions we discuss in class. All relevant information necessary for success on this exam is provided in the lab manuals and will be introduced during the laboratory exercises.

3D printing project (20%): Students will be divided into small groups and each group will use basic 3D modeling software to develop a model of a human brain structure or set of related structures. These models will be designed as a teaching tool you might use to teach a topic in neuroanatomy you find difficult to explain using 2D materials.

Exam 2 (30%): This exam will focus on material in the lectures about the function of various brain regions and neuroanatomical techniques.

Hypothesis testing (10%): During the second half of the course, we will discuss techniques used in neuroanatomy research. Then, during class small groups of students will design experiments using these techniques that could be used to address several hypotheses in the neuroscience field.

Neuroscience in the news (5%): Each student will briefly discuss one current "hot topic" in the neuroscience field in class. The topic can be a recent high-profile paper or a recent discovery that bears on the public's understanding of neuroscience. The class will then discuss these topics.

Grades will be determined based on the following ranges:

A+	97-100%	B+	87-89%	C+	77-79%	D+	67-69%	F	< 60%
A	93-96%	B	83-86%	C	73-76%	D	63-66%		
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%		

Borderline grade decisions will be influenced by participation in class discussions, continued improvement on exam scores, *etc*.

You are expected to take each examination and do your presentations on their scheduled dates/times. If unanticipated circumstances (*e.g.*, illness, death in the family) make it impossible for you to take an examination or give a presentation, **you must** contact me **BEFORE** to the scheduled date to make other arrangements. It is preferable that you speak with me directly but, at a minimum, you must send me an email (fanselow@pitt.edu) and/or leave a message on my office phone (412-383-6051) before the examination or presentation. Also, the circumstances that prevent you from being present must be documented (*e.g.*, letter from physician, obituary). I understand that some of you may miss an exam due to interviews for graduate, medical, or other professional schools. If this is the case, you should make arrangements with me at least one week prior to your planned date(s) of absence so we can find a time for you to take the exam or give your presentation, either before you leave or after you return. You will receive a zero for the examination or presentation if you do not follow these policies. **There will be no exceptions**.

Office appointments

Prior experience has demonstrated that scheduled office hours do not work well in this course. However, I am more than happy to meet with you to address any questions you have regarding the material covered in lectures or projects. Simply send me an email that contains a few times that are best for you to meet and I will get back to you to find a time that works for both of us. I cannot guarantee I will have time to meet if contacted with less than a 48 hour notice, especially in the week or so prior to an exam.

Academic policies

Academic Integrity:
Students in this course will be expected to comply with the University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Prohibition against electronic devices during exams:
All electronic devices capable of sending, receiving, or storing information are expressly forbidden from use during exams in this class. This includes cell phones, text messaging devices, iPods, iPads, PDAs, smart watches, and similar.

Disability Services:
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Accessibility:
Blackboard is ADA Compliant and has fully implemented the final accessibility standards for electronic and information technology covered by Section 508 of the Rehabilitation Act Amendments of 1998. Please note that, due to the flexibility provided in this product, it is possible for some material to inadvertently fall outside of these guidelines.

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Statement on Classroom Recording and Photographs:
To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use. This includes audio recordings, video recordings, photographs, and similar.

FUNCTIONAL NEUROANATOMY LAB PRACTICUM
Spring 2018, Dr. Fanselow
COURSE SCHEDULE

Month	Date	Class #	Topic
January	8	1	<u>Gross anatomy 1</u> • Introduction and formaldehyde training module • Introduction to human brain specimens • Introduction/review of basic anatomical structures in the brainstem and brain
	22	2	<u>Gross anatomy 2 and brain imaging</u> • Ventricles, basal ganglia, internal capsule, and thalamus • Imaging techniques
	29	3	<u>Gross anatomy 3 and brain imaging</u> • Vasculature, sinuses, and cerebellum • Brain cross-section landmarks (imaging and brain slabs)
February	5	4	<u>Stroke and imaging brain trauma and pathology</u> • Stroke • Imaging brain pathology
	12	5	• Sheep brain dissection • Introduction to 3D modeling project and software
	19	6	**Practical exam**
	26	7	• Work on 3D modeling project to decide on a project and the steps to take to make the model • Neuroscience in the News student presentations
March	12	8	• Neuroanatomical techniques lecture • Assess 3D printing project progress
	19	9	• Neuroanatomy hypothesis testing exercise (1) • Hippocampus and temporal lobe lecture • 3D model prototype due for printing
	26	10	• Neuroanatomy hypothesis testing exercise (2) • Prefrontal cortex lecture • Assess printed 3D model prototype and improve model
April	2	11	• Neuroanatomy hypothesis testing exercise (3) • Brain surgery and stimulation lecture • Final 3D model due for printing
	9	13	**Exam 2**
	16	14	• Motor learning/visual coordination field practical exam • 3D model presentations