Honors Functional Neuroanatomy
NROSCI 1011/2011
Fall 2016, Detailed Syllabus

**Description:** Honors Functional Neuroanatomy will examine in detail current knowledge of the structure and function of the human nervous system and how circuits directly contribute to human behavior. Students will learn how structure forms the basis for function and how precision in comprehending and articulating detailed information is vital for expertise in neuroscience. Subjects to be covered include: neurocytology, development, gross structure, sensory systems, motor control, and integrative neural systems. The material will also be considered for how alterations in structure and function contribute to neurological and psychiatric disorders.

Instructor: Susan R. Sesack, PhD
Office: 426 Langley Hall
Hours: Mon and Fri 11:00-12:00 AM, Tue and Wed 12:00-1:00 PM, or by appt
Phone: 412-624-5158
Email: sesack@pitt.edu

GTA: *not yet assigned*
Phone:
Email:

UTA: Rohit Anand
Phone:
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UTA: Sonya Besagar
Phone:
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UTA: Avani Kolla
Phone:
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UTA: Vasil Mico
Phone:
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UTA: Venessa Reguitti
Phone:
Email:

UTA: Julia Strother
Phone:
Email:
Class:   
Class is held four times per week in L9 Clapp Hall: M-W-F from 10:00-10:50 AM plus an additional hour on Wednesday from 11:00-11:50 AM.

Two optional recitations are offered by the Undergraduate Teaching Assistants on days and times to be assigned

Optional exam reviews will be held by the Graduate Teaching Assistant usually two nights before each exam. Please see CourseWeb for the detailed schedule.

Grading:  
Students are responsible for all material presented in lectures. Most exam questions come from the handouts for each lecture, but additional questions come from the lectures themselves. There are 5 non-cumulative exams, each worth 18% of the total grade. Four exams are given during the scheduled class time, and the fifth exam is given during finals week. The remaining 10% of the grade will come from participation in the Top Hat classroom response system.

Students in the Graduate 2011 course: The 5 exams count for 70% of your grade. Top Hat participation represents 10% of the grade, and the remaining 20% requires submission of a paper by the end of class, December 9th. Please see Dr. Sesack for further instructions on the paper.

Recommended Textbook:  

On Reserve:  
Kingsley, Concise Text of Neuroscience  
Heimer, The Human Brain and Spinal Cord  
Kandel, Schwartz, and Jessell, Principles of Neural Science, 4th ed  
Netter, Nervous System, Part I, Anatomy and Physiology  
Sundsten, Interactive Brain Atlas, CD-Rom for Windows and Mac

Internet Neuroanatomy Sites  
(all were working on August 14th 2015)

Blood Supply 
http://www.csus.edu/indiv/m/mckeoughd/AanatomyRev/VascSys/Schematic/CerebAsSchematic.htm  
http://www.youtube.com/watch?v=cq8PPqUDTS0 (Part 1 of 11 part video; need to watch them all)

Embryology, including neuroembryology 
http://embryology.med.unsw.edu.au/

History of Neuroscience - Milestones in Research 
http://faculty.washington.edu/chudler/hist.html

MedPix: Medical Image Database, Central and Peripheral Nerves 
http://rad.usuhs.edu/medpix/
Neuroanatomy Collection  
[http://neuroanatomybsd.uchicago.edu/](http://neuroanatomybsd.uchicago.edu/)

Neuroanatomy Tutorial  
[http://library.med.utah.edu/WebPath/HISTHTML/NEURANAT/NEURANCA.html](http://library.med.utah.edu/WebPath/HISTHTML/NEURANAT/NEURANCA.html)

Neuron Wikipedia  

Neurophysiology Virtual Lab  
[http://www.hhmi.org/biointeractive/neurophysiology-virtual-lab](http://www.hhmi.org/biointeractive/neurophysiology-virtual-lab)

Neuroscience for Kids  
[http://faculty.washington.edu/chudler/neurok.html](http://faculty.washington.edu/chudler/neurok.html)

Primary Visual Cortex  
[http://webvision.med.utah.edu/VisualCortex.html](http://webvision.med.utah.edu/VisualCortex.html)

Retinal Information Processing - Receptive Fields  
[http://www.sumanasinc.com/webcontent/animations/content/receptivefields.html](http://www.sumanasinc.com/webcontent/animations/content/receptivefields.html)

Synapse Web (electron microscopic and 3D rendering of cellular elements in the nervous system)  
[http://synapses.clm.utexas.edu/](http://synapses.clm.utexas.edu/)

From Patty Reagan - needs to be purchased for full capacity  
[www.drawittoknowit.com](http://www.drawittoknowit.com)
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Fall 2016 Schedule

Each block has 7 lectures, with some of the titles below counting as multiple lectures. Please note that new lectures started in the class just before an exam are usually not on that exam.

Dates with no lectures:
September 5th  Labor Day
October 10th  Fall Break, no class
October 11th  Class on Tuesday after Fall Break
November 14th  Society for Neuroscience meeting, no class
November 16th  Society for Neuroscience meeting, no class
November 23rd  Thanksgiving recess
November 25th  Thanksgiving recess

Other important dates:
September 9th  Fall term add/drop period ends
October 28th  Fall term deadline for monitored withdrawal
December ??  Final Exam, date and time not yet assigned

**Block 1**
August 29th - September 14th
Exam Review on Sept 14th at ?? PM
**EXAM 1 on September 16th at 10:00 AM**
Chapters in Brodal: 1-4, 6, 9, 27 (5 optional)
*Neurocytology and Simple Circuits* (2)
*Methods for Studying the Nervous System*
*Neuroembryology*
*Gross Structure: Spinal Cord*
*Gross Structure: Brainstem*
*Gross Structure: Higher Centers*

**Block 2**
September 14th - October 3rd
Exam Review on October 3rd at ?? PM
**EXAM 2 on October 5th at 10:00 AM (NOTE: Exam at 10:00, Lecture at 11:00)**
Chapters in Brodal: 7, 8, 12-15, 17, 18
*Gross Structure: Support and Circulation*
*Introduction to Sensory Systems, Somatosensory Receptors and Receptive Fields* (2)
*Ascending Somatosensory Pathways: Dorsal Column and Spinothalamic Tract* (guest lectures, Fanselow)(2)
*Vestibular and Auditory Systems* (guest lectures, Yates)(2)
**Block 3**
October 5\(^{th}\) - 21\(^{st}\)
Exam Review on October 21\(^{st}\) at ?? PM

**EXAM 3 on October 24\(^{th}\) at 10:00 AM**
Chapters in Brodal: 16, 19-22
*Visual System (3)*
*Olfactory System*
*Introduction to Motor Systems*
*Spinal Reflexes and Descending Brainstem Pathways (2)*

**Block 4**
October 26\(^{th}\) - November 9\(^{th}\)
Exam Review on November 17\(^{th}\) at ?? PM

**EXAM 4 on November 18\(^{th}\) at 10:00 AM**
Chapters in Brodal: 22-25, 28, 29
*Eye Movements (Yates)*
*Descending Pathways for Voluntary Movement*
*Basal Ganglia (1.5)*
*Cerebellum (1.5)*
*Autonomic Nervous System (2)*

**Block 5**
November 11\(^{th}\) - December 9\(^{th}\)
Exam Review on ??

**EXAM 5 on ??**
Chapters in Brodal: 10, 11, 26, 30-34
*Hypothalamus*
*Reticular Formation and Regulation of Conscious States (1.5)*
*Limbic Circuitry*
*Hippocampus*
*Cerebral Cortex (guest lecture, Fanselow)*
*Cognitive and Neurodegenerative Disorders*
*Plasticity and Regeneration in the Nervous System*