

Honors Functional Neuroanatomy
NROSCI 1013/2011
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
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Hours: Mon and Fri 11:00-12:00 AM, Tue and Wed 12:00-1:00 PM, or by appt
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Phone:
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UTA: Rohit Anand
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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: Brodal, *The Central Nervous System, Structure and Function*, 4th ed

On Reserve: Brodal, *The Central Nervous System, Structure and Function*, 4th ed
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=cq8PPqUDTSo> (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://neuroanatomy.bsd.uchicago.edu/>

Neuroanatomy Tutorial

<http://library.med.utah.edu/WebPath/HISTHTML/NEURANAT/NEURANCA.html>

Neuron Wikipedia

<http://en.wikipedia.org/wiki/Neuron>

Neurophysiology Virtual Lab

<http://www.hhmi.org/biointeractive/neurophysiology-virtual-lab>

Neuroscience for Kids

<http://faculty.washington.edu/chudler/neurok.html>

Primary Visual Cortex

<http://webvision.med.utah.edu/VisualCortex.html>

Retinal Information Processing - Receptive Fields

<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/>

From Patty Reagan - needs to be purchased for full capacity

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

Other important dates:

September 9 th	Fall term add/drop period ends
October 28 th	Fall term deadline for monitored withdrawal
December ??	<i>Final Exam, date and time not yet assigned</i>

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 (2)

Vestibular and Auditory Systems (guest lectures, Yates)(2)

Block 3

October 5th - 21st

Exam Review on October 21st at ?? PM

EXAM 3 on October 24th 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 26th - November 9th

Exam Review on November 17th at ?? PM

EXAM 4 on November 18th 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 11th - December 9th

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

Cognitive and Neurodegenerative Disorders

Plasticity and Regeneration in the Nervous System