

# NEUROANATOMY AND NERVOUS SYSTEM DISORDERS

BMS 612 (call #22080); NEU 605

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(FALL 2009: Tu, Th 1:00 - 2:30; MS518 @AMC)

## SYLLABUS

- SEPT 1 Overview of the nervous system: Basic features of the CNS and PNS (Dr. Snyder-Keller)  
3 Ventricular system; blood supply; meninges (Dr. A. Snyder-Keller)
- 8 Spinal cord; brainstem; cranial nerves (Dr. A. Snyder-Keller)  
10 Hypothalamus; autonomic nervous system (Dr. Lauren Jacobson)
- 15 Cortex; thalamus (Dr. Frank Rice)  
17 Somatosensory system (Dr. Phillip Albrecht)
- 22 Sensory systems: Visual (Dr. Frank Rice)  
24 Brain imaging (Dr. Snyder-Keller)
- 29 EXAM 1
- OCT 1 Overview of motor systems: Pyramidal tract (Dr. A. Snyder-Keller)
- 6 Motor systems: Spinal reflexes and spinal cord injury (Dr. Jon Wolpaw)  
8 Motor systems: cerebellum (Dr. Wilson Crone)
- 13 Motor systems: basal ganglia (Dr. A. Snyder-Keller)  
15 Parkinson's disease (Dr. Rick Keller)
- 20 NO CLASS – Society for Neuroscience meeting  
22 Huntington's chorea (Dr. Don Higgins)
- 27 Limbic system (Dr. Lauren Jacobson)  
29 Epilepsy (Dr. Yunfei Huang)
- NOV 3 EXAM 2  
5 Stroke; Ischemia (Dr. Paul Feustel)
- 10 Depression; Manic-depressive illness (Dr. Jeff Carlson)  
12 Schizophrenia (Dr. Jeff Carlson)
- 17 Alzheimer's disease (Dr. David Carpenter)  
19 Genetics of Neurological diseases (Dr. Anne Messer)
- 24 NS plasticity: Experimental lesions; regeneration; sprouting (Dr. Jonathan Carp)  
26 NO CLASS - THANKSGIVING
- DEC 1 Developmental Disorders (Dr. ??)  
3 Drug Addiction (Dr. Stanley Glick)

**FINAL EXAM - suggested date Monday, Dec 14.**

## **BMS 612 / NEU 605: NEUROANATOMY AND NERVOUS SYSTEM DISORDERS**

**FALL 2009 — Abigail Snyder-Keller, course director**

*Prerequisites: No specific course prerequisites, although some exposure to Neuroscience at either the undergraduate or graduate level is recommended.*

### **Course objectives and description:**

The purpose of this course is twofold. First, to provide a comprehensive overview of the anatomy of the brain from a systems perspective. Second, to provide an introduction to the major neurological and psychiatric disorders with known brain pathology. Upon completion of the course, students will be expected to be able to:

- 1) Describe interactions between brain regions involved in specific sensory and motor systems, as well as in systems involved in more complex behaviors.
- 2) Identify pathophysiological processes that underlie the most common nervous system disorders.

The first half of the course covers basic neuroanatomy: the location and organization of individual structures is discussed as we work up the neuraxis, and then structures are combined into sensory, motor, and integrative systems for which function is also discussed. In the second half, individual disorders of the nervous system are presented, with an emphasis on known pathological bases, and also covering symptomatology and treatment strategies.

This course draws upon the expertise of numerous neuroscientists in the area. Most classes are in lecture format, with discussion as deemed appropriate by the instructor. An outline of the material covered will be provided as a handout for each class. The suggested text for the course, *The Human Brain: An Introduction to Functional Anatomy*, by John Nolte (6<sup>th</sup> ed., Mosby Inc., 2008) provides the best summary of the material presented in the first half of the course (basic neuroanatomy), although other books on the reading list provide a comparable overview, or can be used as supplements. Some instructors, particularly those teaching in the disorders part of the course, may provide a list of articles that will be appropriate reading material.

As part of their grade (see below), students are asked to review a recent paper in class which relates to the particular brain region or disorder that is being covered that day. The paper should be chosen with the faculty member teaching that lecture, and that person will be responsible for assigning a grade, which will reflect the student's performance in class, as well as a short report on the paper. The student will be given 15-20 min at the end of that class period, in which to present the paper.

**GRADING:** Letter grade determined by total points obtained from the following:

Exam 1 (25%): fill-in, MC, T/F, matching, short answer, long answer

Exam 2 (25%): fill-in, MC, T/F, matching, short answer, long answer

Paper presentation and report (10%) - see attached explanation

EXAM 3 **FINAL** (40%): similar to Exams 1 and 2, with more short and long answer questions (i.e. requires more writing) and some review of earlier material.

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**PAPER REPORT AND PRESENTATION**

1. Select the topic (lecture) of greatest interest to you. **NOTE:** Only one presentation per class period, so selecting yours early will guarantee that you spend your time on something of interest!  
**BUT...** you cannot pick a topic that is what your research is on. *Verify with Dr. Snyder-Keller that that class/topic is available - choices must be made through her.*
2. Select a *recent* paper (last 1-2 years) in consultation with the instructor for that class period.
3. Present paper in last 15 minutes of that class. Distribute copies of the first page (containing the abstract) of the article to class members before you start.
4. Prepare a 2-3 page written report of the paper:
  - summarize approach and results
  - discuss findings in terms of how they relate to our knowledge of that disorder and/or brain region - *this is the most important part*(NOTE: it's a good idea to submit an outline of your presentation to the class instructor *one week prior* to your class presentation (or less if instructor agrees). This gives the instructor an opportunity to evaluate your understanding of the paper beforehand, and better guide you in your presentation.
  - revise your report after your class presentation; submit final paper to the class instructor AND the course director (Dr. Snyder-Keller) - due by the last day of classes (Dec 9)
5. Grade will be determined by class presentation plus report.
6. NOTE: The final exam will include one 1-pt. T/F question (main point) about each paper.

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**SUGGESTED TEXTS: (select one)**

- Nolte, John, The Human Brain: An Introduction to its Functional Anatomy, (6<sup>th</sup> ed., Mosby, Inc.) 2008.
- Kiernan, John A., Barr's Human Nervous System: An Anatomical Viewpoint (8<sup>th</sup> ed., J.B. Lippincott Co.) 2004.
- Blumenfeld, Hal, Neuroanatomy through Clinical Cases (Sinauer Associates) 2002.
- Haines, D.E., Fundamental Neuroscience (Churchill Livingstone)

ALTERNATIVES:

- Fitzgerald, M.T., Neuroanatomy: Basic and Clinical (Balliere Tindall)
- Martin, J.H., Neuroanatomy: Text and Atlas (Appleton & Lange)

