

## Syllabus for ANNB 225 Human Neuroanatomy, Spring 2010

### General Information

This course focuses on human neuroanatomy with basic functional information and will include both lecture and laboratory material. The course meets 10:00-11:15 Tuesday & Thursday with a lab from 8:30-9:45 am Thursdays. The lecture will meet in Given C443, the Lab in Given E401.

The Course Director is Dr. Cindy Forehand ([cynthia.forehand@uvm.edu](mailto:cynthia.forehand@uvm.edu)). Her office is in HSRF 426a and her telephone number is 656-8060. There are three laboratory instructors for the course who will be teaching in the lab and will hold laboratory help/review sessions before each examination. They are the lab coordinator, Dr. Ellen Cornbrooks ([ellen.cornbrooks@uvm.edu](mailto:ellen.cornbrooks@uvm.edu)), and two teaching assistants (TAs), Vanessa Ochoa ([vanessa.ochoa@uvm.edu](mailto:vanessa.ochoa@uvm.edu)) and Michael Williams ([michael.williams@uvm.edu](mailto:michael.williams@uvm.edu)).

The textbook for the course is Clinical Neuroanatomy and Neuroscience, 5th Edition - With Student Consult Online Access By M. J. T. FitzGerald, MD, PhD, DSC, MRIA, Gregory Gruener, MD, MBA and Estomih Mtui, MD., Saunders Copyright 2007. The textbook will serve as a supplement to laboratory and lecture handouts.

You will also need to purchase a box of disposable gloves for use in the laboratory. If you have a latex allergy, get nitrile gloves. (Nitrile gloves are more expensive and harder to size correctly, but are better than latex for blocking lab chemical odors.) You can split the purchase of the gloves with a classmate whose hands are similar in size as you will likely not need more than 1/2 box. You will have a locker in which to keep the gloves and any other lab materials during the course. You will need to supply your own lock if you wish to have a lock.

There will be a Blackboard site for the course where lecture and laboratory handouts will be posted.

### Grades – Undergraduate Students (Graduate students please see last page of syllabus)

Grades will be assigned based on attendance, performance on examinations, and a final paper with the contribution of each to a total of 100 points as follows:

Attendance: *Attendance is required* and will contribute 15% of the final grade. You may miss three sessions (each lab **or** lecture is a session) without penalty; **after three missed sessions, one point is lost for each absence, up to a total of 15 points.** You will be counted absent if you are more than 15 minutes late. (Attendance at examinations is also required but does not contribute to the attendance component of the grade.)

Examinations: There will be 3 examinations, each of which will contribute 20% of the final grade. Each examination will include both a written examination and a laboratory practical. The written component of the examinations may include short answer, multiple choice and matching questions. The practical component of the examinations will include identification of gross anatomical structures and short answer responses concerning their function. Examinations are not technically cumulative in that they will focus on the new material each block of the course; however, the nervous system is defined by its interconnections and thus you will be expected to retain and use material as it's presented and throughout the course.

**Final Paper:** The final paper for the course will contribute 25% of the final grade; in the paper you will discuss a neuroanatomical topic, chosen from a list of several topics made available after the second examination. The paper will require library-based research and must be supported by primary literature citations (not websites or review papers). The paper will be 8-12 pages, double spaced, using Times Roman (or equivalent) 11 point font, with 1 inch margins on all sides. The list of literature cited (bibliography) is in addition to the 8-12 pages. The format for literature citations within the text and in the bibliography will be that used by the *Journal of Neuroscience*. Diagrams to illustrate points are encouraged, but must be generated by you, not taken from printed articles, text books or online resources. Grading of the paper will be based on content, logical presentation, and proficiency of grammar and spelling. The paper must be submitted as a word document via email attachment.

**An outline of the paper with at least 5 primary literature references (not websites or reviews) will be due April 20.** The references turned in with the outline must be in *Journal of Neuroscience* format. You may also have additional references that are review papers. Failure to turn this outline in on time and receive a satisfactory grade for it will result in a 5% deduction from the Final Paper Grade.

**Grading summary – Undergraduate Students (Graduate students please see last page of syllabus)**

**Attendance: 15%**

**3 examinations: 20% each**

**Paper: 25%**

## **Student Related Issues**

**Illness/Emergency:** Students will be excused from class for a documented illness or family/personal emergency. (That is, an excused absence will not count towards the 3 sessions you may miss without penalty and won't count against you if you already have three misses.) Students must contact the course director **prior to** missing the session unless physically prevented from doing so by the nature of the emergency.

**Religious holidays:** If your religion has a holiday that conflicts with attendance at any course session, please submit written documentation of the holiday(s) to the Course Director **not later than January 21, 2010** and a plan for making up missed work will be arranged.

**Accommodation for Disabilities:** If you have a documented disability that requires accommodation for examinations or other course components, please have the Access Office send the documentation to the Course Director **not later than January 21, 2010** and schedule an appointment to meet with the Course Director to discuss the accommodation **not later than January 21, 2010**.

Other policies related to student rights and responsibilities may be found at

<http://www.uvm.edu/academics/catalogue2006-07/?Page=allpolicies.php&SM=policymenu.html&policy=Rights%20and%20Responsibilities%20of%20Undergraduate%20Students>

## Lab Rules and Information

1. Respect the laboratory material and the people who have made it possible for you to study the real human brain.
2. No food or drink (including water bottles) in the lab – protects the specimen and your health.
3. Always wear gloves when handling any lab specimen.
4. Laboratory demonstrations will remain available from the day of the lab until the examination for that portion of the material. The TAs will schedule sessions outside class time if you would like to review the material.
5. You will receive a black and white copy of the text/figures accompanying each lab station. Original files will be uploaded to the Blackboard site for the course – these are BIG files so open them on a library computer if you don't have a fast internet connection.

## Study Tips

1. Don't get behind. Neuroanatomy is very much like a foreign language, but you are linking words to objects, rather than your native language. You must re-visit the material frequently to become fluent in the language. Much of the work is self-guided learning and practice.
2. The chapters in the text are short – but dense. Specific reading assignments will be made from the text; often only portions of the relevant chapter(s) will be assigned. Most of the diagrams in lecture will come from the text –if you are confused about the description of the figure in class, you can find the relevant figure in the text and read the associated paragraph(s) in the text. Often text figures will be used that did not come from the actual assigned reading. It's good to skim the assigned readings before class, then review after corresponding lab/lecture sessions.
3. Prioritize:
  - Lab specimen and their functions; lab handouts
  - Lecture handouts and notes
  - Textbook assignments
  - Textbook text associated with Figures used in lecture
4. Don't get behind.
5. The brain and nervous system are awesome – have fun.

### Good Web Resources:

<http://library.med.utah.edu/WebPath/HISTHTML/NEURANAT/NEURANCA.html> lots of pictures of parts of the brain with structure lists that you can click on to see an arrow that points to the structure

<http://video.med.utoronto.ca/neuronotes/> (Big program (~180 mB) must be installed to use –Does not work on Macs)

**Course Schedule for ANNB 225 Human Neuroanatomy, Spring 2010**

<b>Date</b>	<b>Lecture Topic</b>	<b>Lab Date</b>	<b>Lab Topic</b>	<b>Reading Assignment</b>
January 19	Overview of Brain Anatomy and Embryology			Lecture Handout Chs. 1 and 4; Ch. 2 pp. 7-11 (top)
January 21	Brainstem, Spinal Cord and Peripheral Nervous System	1/21	Overview of Anatomy of the CNS: Brain, Brainstem and Spinal Cord	Lecture and Lab Handouts Ch. 3 pp 27-29 (top) and 35-37; Ch.14;
January 26	Typical Spinal Nerve and Autonomic Nervous System			Lecture Handout Chapter 9 Ch. 13 pp 151-155
January 28	Cells of the Nervous System and Signaling I	1/ 28	Review Lab 1 PNS and ANS	Lecture and Lab Handouts Chs. 6, 7 and 8
February 2	Cells of the Nervous System and Signaling II			Lecture Handout
February 4	<b>Written Exam 1,</b>	2/4	<b>Lab Exam 1</b>	
February 9	Brainstem: Reticular Formation and Cranial Nerves I (name all, focus on V, VII, IX, X, XI, XII)			Lecture Handout Repeat Ch. 3 pp 27-29 & 35-37; Chs. (17), 18, 21, & 22; Ch. 24 pp 265-7 & 273-76
February 11	Cerebral cortex and thalamus	2/11	Functional Anatomy of Cerebrum, Brainstem and Spinal Cord	Lecture and Lab Handouts Repeat Ch. 2 Chs. 27 and 29
February 16	Spinal cord and pathways			Lecture Handout Ch. 15; Ch. 16 pp 192-3; Spinal cord pathways ONLINE module
February 18	Somatosensory System	2/18	Brainstem tours	Lecture Handout Chs. 11, 21; (Ch. 10); Lab Handout
February 23	Brainstem and Cranial Nerves II (focus on III, IV, VI, VIII, MLF)			Lecture Handout Ch. 23
February 25	<b>Written Exam 2</b>	2/25	<b>Lab Exam 2</b>	

March 2	Visual System and Eye Movement			Lecture Handout Ch. 28 and repeat Ch. 23
March 4	Motor System I: cortex, spinal cord and muscle;	3/4	Visual system	Lecture and Lab Handouts; Chs. 10, 16; Ch 24 pp268-9; Ch 3, pp31-33 Repeat Ch. 22
March 9	<b>No Class – Spring Break</b>			
March 11	<b>No Class – Spring Break</b>			
March 16	Motor System II: vestibular system, cerebellum & basal ganglia			Lecture Handout Chs. 19, 23, and 25
March 18	Movement disorders (UMN, LMN, Parkinsons, Cerebellum)	3/18	Motor system Horizontal Slice Tour	Review Both Motor Systems lectures; Lab Handout
March 23	Olfactory & Limbic System; Affective Disorders			Lecture Handout Ch. 34; Repeat Ch. 24 pp266-7
March 25	Auditory System and Language	3/25	Limbic system	Lecture and lab Handouts Chs. 20 and 32
March 30 <b>Paper topic due</b>	Blood Supply and relationship to functional CNS areas			Lecture Handout Chs. 5 and 35
April 1	Non-parkinson Basal Ganglia Disorders (OCD, Tourette's and TIC disorders)	4/1	Coronal Slice Tours	Lecture Handout Lab Handout
April 6	Executive Function; Consciousness			Lecture Handout Chs. 30 and 32
April 8	Paper Tips	4/8	Blood Supply and Cerebrovascular Disease	
April 13	Lab Review			
April 15	<b>Written Exam 3</b>	4/15	<b>Lab Exam 3</b>	
April 20	<b>Outline and minimum of 5 1<sup>o</sup> references due</b>			
April 22	Outline discussion		No lab	
April 27	Work on papers			
<b>April 29</b>	<b>Final Papers Due</b>		No lab	
<b>May 4</b>	<b>Course and Faculty/TA Evaluations Due</b>			

### **Grades – Graduate Students**

Grades will be assigned based on attendance, performance on examinations, presentations of research topics and a final paper, with the contribution of each to a total of 100 points as follows:

**In addition to the examination and paper components listed above for undergraduate students, graduate students will make three presentations on research topics (one during each examination block for the course).** The focus of the presentation will be on the techniques used to visualize neuronal circuitry at the systems, cellular and molecular level. Each student will make a presentation about each of these levels of neuroanatomy. These presentations are not limited to topics in human neuroanatomy, but at least one of the presentations must involve the mammalian nervous system.

For each presentation, students will identify a paper from the primary literature published in a top tier journal within the last two years. In the presentation, the student must describe the basic question being addressed in the paper, why it is important and the techniques used to address the question. Grading will be based on demonstrated understanding of the question in the context of the field, clarity of the presentation and demonstrated understanding of the techniques used and their interpretation and pitfalls.

Each presentation will be 30 minutes and the format may be a chalk talk or a power point presentation. A written outline of the presentation is due one week in advance of the presentation. All graduate students will attend the presentations of their classmates. Presentation sessions will be scheduled during the week after each examination during a commonly available time. Sessions will be a maximum of 2 hours in length so there will be two sessions scheduled each presentation week if there are more than 4 students.

### **Grading summary – Graduate Students:**

Attendance: attendance is required; each unexcused absence in excess of 3 missed sessions results in a one point deduction from your final course average

3 examinations: 10% each

3 presentations on research topics: 15% each

Paper: 25%