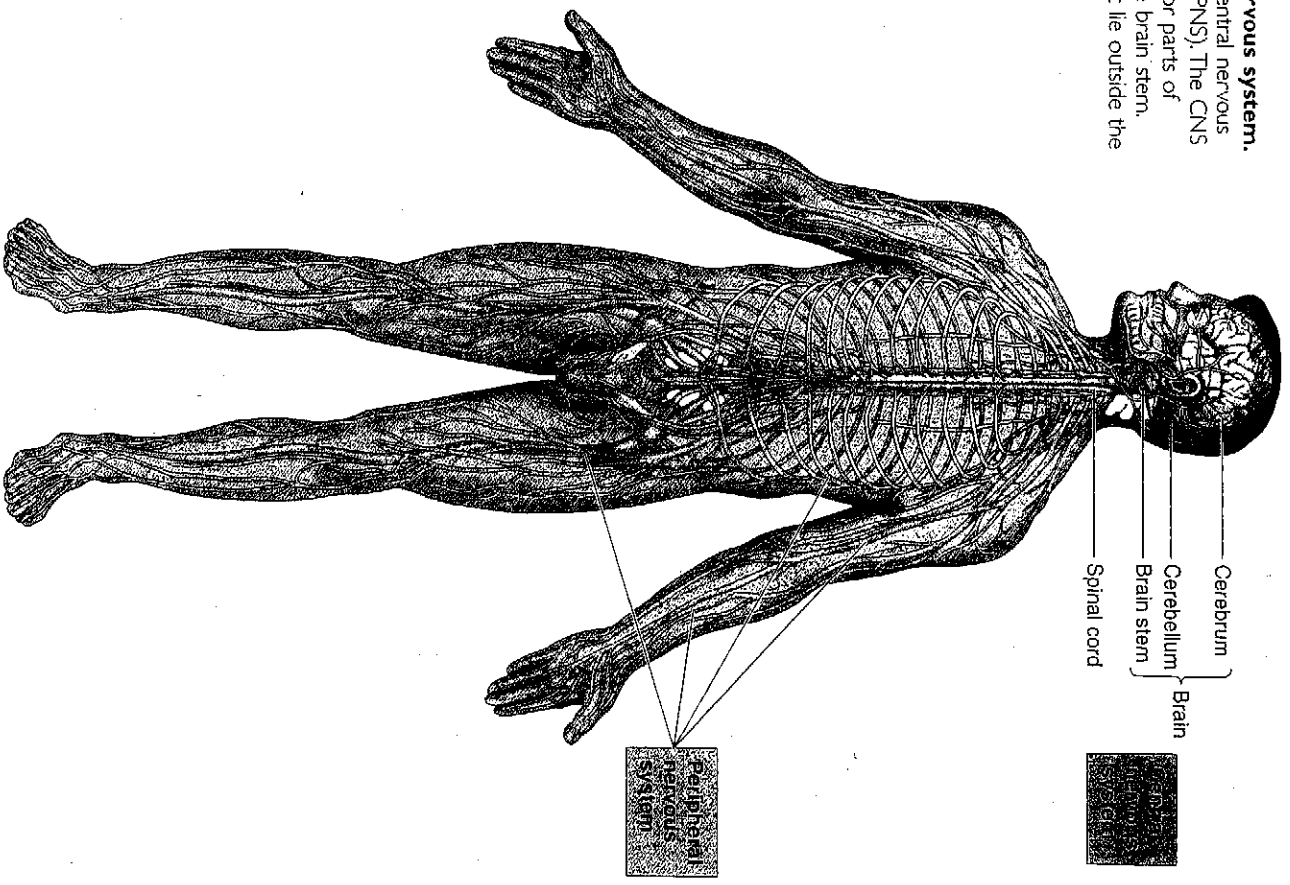


# NEUROSCIENCE 201

## THE BRAIN: AN INTRODUCTION TO NEUROSCIENCE

**FIGURE 1.7**  
**The basic anatomical subdivisions of the nervous system.**  
The nervous system consists of two divisions, the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS consists of the brain and spinal cord. The three major parts of the brain are the cerebrum, the cerebellum, and the brain stem. The PNS consists of the nerves and nerve cells that lie outside the brain and spinal cord.



Oberlin College, Spring 2013  
Professor Pat Simen  
Professor Jan Thornton

## Course Aims and Objectives

The goal of this course is to introduce students to the field of neuroscience. We hope to interest all students in, and inform them about, the exciting discoveries taking place in this rapidly moving area of science. At the same time, the material in the course will provide prospective majors with the knowledge they need for further study of the neurosciences.

The first two sections of the course provide the building blocks of neuroscience: basic cellular and molecular principles that contribute to both communication within and between neural cells, and an introduction to the small and large parts of nervous systems. The third section covers the various motor and sensory systems. The fourth section addresses a variety of integrative topics that depend on the earlier material. These topics include learning and memory, emotion, addiction and reward, mental illnesses, and cognitive functions.

## Lectures

Attending lectures is essential because it is the material we consider to be the most important and *it is the material on which you will be examined.*

In addition, important course announcements concerning changes in assignments, times for review/discussion sessions, etc. are given in lecture, generally at the beginning of class. *If you are absent, it is your responsibility to find out this information.*

## Textbook and Other Reading

Required Text: Neuroscience: Exploring the Brain (3<sup>rd</sup> edition) by M. Bear, B. Connors and M. Paradiso; Lippincott, Williams and Wilkins, Baltimore, 2007. (ISBN: 0-7817-6003-8). This book is available at the Oberlin Bookstore.

We strongly encourage you to read the textbook because it complements the lecture material by providing an alternative voice and, in some cases, additional details. The figures in the textbook can also be very helpful. *Unless specifically announced in class, we will not ask questions on the exams from the textbook material unless that material was also covered in lecture.*

Any additional reading will be announced in class and may be placed on reserve in the Science Library and/or on Blackboard.

## Exams, Writing Assignments and Grades

Your grade in this course will be based on 4 written exams and 1 short writing assignment. All exams are closed book and based on the material presented in lecture. The writing assignment will require some reading and library research. Explicit instructions will be provided in class at a later date. The scheduled times for the exams and the due dates for the writing assignment are given below along with the proportion of your grade to be contributed by each of them.

Feb 21	Exam I	(10%)
Mar 14	Exam II	(15%)
Apr 18	Exam III	(30%)
May 6 (Mon)	Writing Assignment	(15%) (due NO LATER than 5:00 pm)
May 15 (Wed)	Exam IV	(30%) (2 hr., non-cumulative exam to be given 2-4 PM)

***In order to receive credit for this course, a student must complete all exams and the writing assignment listed above.***

**We want to encourage you to organize your time and plan ahead.** Therefore, the Neuroscience Department does not, under normal circumstances, permit extensions for exams unless a student chooses to opt for an academic incomplete. In an exceptional emergency, please contact Pat Simen or Jan Thornton as soon as possible so that an appropriate course of action can be determined. *A late writing assignment will be subject to a penalty of one-half letter grade for each day that it is late.*

## **Honor Code**

The Oberlin College Honor Code applies to all assignments for this course. Before turning in each of your exams and your writing assignment, you need to write on them the honor pledge and sign it. The pledge is as follows: **"I affirm that I have adhered to the Honor Code in this assignment."** The exams are all closed book and closed notes and all notebooks, packs, etc *must* be placed off of the exam table/desk. For the exams, signing the honor pledge signifies that you have abided by those restrictions and neither given nor received aid during the exam. The way that the Honor Code applies to the writing assignment will be specified when that assignment is given in a few weeks.

## **Office Hours and Appointments**

We will respond to both procedural and substantive questions via email provided the answer required is relatively short. For longer discussions, please come during office hours or make an appointment. Be aware that it may take 1-2 weekdays to answer an email and we may not answer emails over the weekend.

Pat Simen's office is Science Center A244. His office hours are W4:30-5:30 and Th 1:30-3:30 and by appointment ([pat.simen@oberlin.edu](mailto:pat.simen@oberlin.edu) , 775-8823)

Jan Thornton's office is Science Center A240. Her office hours are Mon 10:30-11:30 am and T 3:00-4:00pm and by appointment ([jan.thornton@oberlin.edu](mailto:jan.thornton@oberlin.edu), 775-8341).

## **Discussion/Review Sessions**

Informal question and answer sessions will be offered by the instructors about two days prior to each exam. The time and place of these sessions will be announced in class.

## **Student-led Learning Workshops (aka 'workshops')**

The workshop leaders for this course are Amanda Strominger and Gabriel Marx. Both Amanda and Gabe are Neuroscience majors. They will hold workshop sessions on Tues 7:30-8:30 pm in Science Center A154 and Thurs 7:30-8:30 pm in Science Center A255. They can also be available for a weekly drop-in session.

## **Tutorial Help**

If you find that you are having trouble understanding the material in the course, please see us immediately. It is not advisable to wait until a low score on an exam has confirmed your perception of difficulty with the material. We are prepared to help any student and can facilitate arrangements for a student tutor. To seek a student tutor, contact Ms. Lynda Lee, Tutor Coordinator, Student Academic Services, Peters Hall 118 (phone: 775-8466; email: [lynda.lee@oberlin.edu](mailto:lynda.lee@oberlin.edu) ).

## **Students with Disabilities**

If you have a specific physical, psychiatric or learning disability that requires accommodation (such as a note taker or special testing arrangements), please let Pat Simen or Jan Thornton know during the first week of classes so your learning needs can be appropriately met. You will need to provide documentation to the Office of Disability Services, Peters Hall G-27 / G-28 (phone: 775-5588; email: [jane.boomer@oberlin.edu](mailto:jane.boomer@oberlin.edu) ).

## Lecture Schedule

(Times and topics are approximate)

Date	Topic	By	Associated reading in text
Feb 5	Introductions, Historical Context	JT	Ch 1; Ch 2 pp 24-27
Feb 7	Cellular and Molecular Neurobiology	JT	Ch 2, pp28-49; Ch 3, pp 52-58
Feb 12	Cellular and Molecular Neurobiology	JT	Ch 2, pp 28-49; Ch 3, pp 52-58
Feb 14	Neural Communication: Resting Potential	PS	Ch 3, pp 59-72
Feb 19	Neural Communication: Action Potential	PS	Ch 4
Feb 21	<b>Exam I through Feb 14</b>		
Feb 26	Synaptic Transmission	PS	Ch 5
Feb 28	Neurotransmitter Systems	PS	Ch 6, pp 134-152; Ch 15, pp 498-507
Mar 5	Signal Transduction	JT	Ch 5, pp115-119; Ch 6, pp 152-165
Mar 7	Structure of the Nervous System	JT	Ch 7 (including appendix)
Mar 12	Structure of the Nervous System	JT	Ch 7; Ch15, pp 481-498
Mar 14	<b>Exam II through Mar 7</b>		
Mar 19	Structure of the Nervous System	JT	Ch 7; Ch15, pp 481-498
Mar 21	Somatosensory Systems	JT	Ch 12
	<b>SPRING BREAK</b>		
Apr 2	Movement	PS	Ch13, pp 424-430; Ch14
Apr 4	Hearing	PS	Ch 11, pp 344-376
Apr 9	Vision: The Eye	PS	Ch 9
Apr 11	Vision: The Brain	PS	Ch 10, pp 310-333
Apr 16	Development, Plasticity, Regeneration	JT	Ch 23
Apr18	<b>Exam III through Apr 11</b>		
Apr 23	Learning and Memory	PS	Ch 24; Ch 25, pp 776-792
Apr 25	Higher Cognitive Functions	PS	Ch 21
Apr 30	Addiction and Reward	PS	Ch 15, pp 505-508; Ch 16, pp 522-526
May 2	Emotion	JT	Ch 18
May 6 (Mon)	<b>Writing Assignment due by 5:00 pm</b>		
May 7	Neurological Differences and Disorders	JT	Ch 22
May 9	Neurological Differences and Disorders	JT	Ch 22
May15 2-4pm	<b>Exam IV through May 9</b> (Final Exam, noncumulative)		