

INTRODUCTION TO NEUROSCIENCE

Spring 2005

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Required Materials:

- Kalat, J. (2003). Biological Psychology 8th Edition
- Exploring Biological Psychology CD-Rom (packaged with textbook)

Course website: <ftp://users.etown.edu/p/pricea/physio/home.htm>

- This site contains the most up-to-date information regarding the schedule for the class. From this page you can access lecture overviews, assignments, study guides, grades and anything else pertinent to the class

Course objectives:

The brain is a fascinating organ yet many of us are quite anxious about its study. Many students have confessed to being nervous about this class because it involves considerable memorization and requires us to think about topics with which we are quite unfamiliar. These factors can make the class intimidating but the topics within neuroscience are often quite amazing and interesting once you begin to understand them. Once you are interested in the material, it can be understood more readily, making the class a bit easier. Thus, my main goal is to make the topics and intriguing to you as they are to me. In doing so, the following objectives should also be met:

- To develop a general understanding of the biological basis of behavior. We often view our minds and behaviors as somehow being separate from our brains and bodies. This class seeks to demonstrate that our behaviors are a reflection of the brain's activity.
- To understand how nature and nurture must each play very important roles in our development (throughout our lives). Rather than attribute a behavior to one or the other, it is important to understand how the two interact.
- To become familiar with the biological explanations for a number of abnormal behaviors, including depression, substance abuse and schizophrenia.

Course Requirements

- Class participation
 - Class sessions will consist of lecture, discussion and group activities. To help engage you in the material, I will frequently ask the class to consider questions related to material covered in the text and lecture. Often, these questions will be available on-line prior to class so you may consider them while reading the text. By preparing answers to these questions you not only prepare yourself for class discussion but will inevitably remember more from your reading.
 - Your grade will reflect attendance, willingness to answer questions and the sophistication of your answers. A willingness to pose questions, either regarding material you didn't understand or issues you disagree with, will also be considered in the final participation grade.
 - Participation will count as 10% of your grade.
- Lab activities
 - We simply do not have the time or resources to do hands-on activities related to the course but the Biological Psychology CD-Rom contains some very clear tools to increase your understanding of complex material. Most of the time and effort you spend on the lab will involve going through simulations and multimedia clips provided on your CD-Rom. These simulations have been chosen because they provide an excellent addition to the text and lecture.
 - Each lab activity will be accompanied by several questions, which will be posted on-line and can be accessed via a link on the class' home page. The due dates for each assignment are listed on the syllabus and on the home page.

- The lab assignments are worth 25% of your grade.
- Group project
 - One of the most interesting ways to learn about the relationship between brain and behavior is to see what happens when a particular part of the brain is damaged. The focus of the group project, therefore, is to learn more about a specific type of brain damage.
 - Each group will be assigned a particular form of brain damage (i.e. damage to the orbitofrontal cortex). The groups will then create a case study, which will be written up and, in part, be presented to the class.
 - More specific information will be provided but, generally, the case study will:
 - briefly address the hypothetical patient's background and cause of the lesion/damage
 - address the changes that the patient and friends have noticed in behaviors and abilities (note, in some situations, the patient may be oblivious that any changes have occurred)
 - discuss any additional changes that could be expected over time with aging or development
 - Grades for each assignment will reflect the creativity, sophistication and completeness of presentation and paper as well as each member's involvement in the project.
 - The project will be broken down into 3 graded assignments over the course of the semester, including a final presentation. Each group member must contribute to each assignment; although the division of labor may vary by assignment each member should do equal work over the course of the semester
 - All together, the project is worth 22% of your grade.
- "How does that work?" paper
 - Students often find that neuroscience is more interesting than they initially expected and they are often curious to find out how various brain-related things work (e.g. "why do we yawn?"; "what causes PMS?"; "why is nicotine so addictive?").
 - For this paper, students will choose a similar question to research and will write a brief (3-4 pages) paper discussing their findings. This paper will be due relatively early in the semester as I will work to include students' questions and findings into lecture.
 - This paper is worth 10% of your grade.
- Exams
 - Three exams (including the final) will test your knowledge of the information we cover in class and in the text (including material from featured boxes) and your ability to critically evaluate related material.
 - If you will not be in class on the day a test is scheduled, you must let me know at least 3 days in advance in order to schedule a make up time. Without advance notice, tests cannot be made up. Any changes to the test dates will be announced both in class and on the class web site two weeks in advance. Tests can be taken before the official test date if necessary.
 - A review sheet will be posed on-line at least 1 week in advance of the test. If there is interest, I will provide a review session at least 3 days prior to the exam but I will only answer specific questions posed by students. Please come prepared. Please let me know if you are interested in a review session.
 - Exams are each worth 33% of your grade.

General Course Policies

- Active attendance of class is expected. You are responsible for all assignments, announced schedule changes and material that is covered
- **Late assignments will not be accepted.** If you will miss class on the day an assignment is due, you can either e-mail the assignment or turn it in prior to the due date.
- I will not be able to discuss all of the assigned reading during class. I will work to cover particularly difficult material but if you have questions on topics I do not cover, feel free to address them in class.
- Clearly, cheating is not allowed and can be cause for failure of the course. It is understood that all work in this course is yours. You are expected to adhere to the guidelines provided in Academic Integrity at Elizabethtown College.

Schedule of Topics:

Class	Topic	Reading due	Lab due
T Jan. 18 th	Introduction	2-8; 20-27	
Th Jan. 20 th	Genetics of Behavior	9-19	
T Jan. 25 th	The Neuron	29-51	
Th Jan. 27 th	The Synapse	53-59	2.2, 2.3, all of 3
T Feb. 1 st	Drugs & Neurotransmitters	60-70	<i>Project groups decided</i>
Th Feb. 3 rd	Substance abuse	451-463	15.2, 15.3
T Feb. 8 th	Basic Neuroanatomy	73-105	
Th Feb. 10 th	Brain development	107-128	4(sagg section; illustration of binding)
T Feb. 15 th	Brain Lateralization	420-432	“How does that work” paper due
Th Feb. 17 th	Catch up		14.1
T Feb. 22 nd	Exam 1		Project part 1 due
Th Feb. 24 th	Visual Perception	143-164	5.1, 5.5, 5.6
T Mar. 1 st		165-185	
Th Mar. 3 rd	Other Sensory Systems	187-218	
T Mar. 15 th	Movement	227-259	
Th Mar. 17 th	Sleep	261-291	7.1, 7.4
T Mar. 22 nd	Internal Regulation	293-321	
Th Mar. 24 th	Reproductive behaviors	323-353	All of reproduction
Th Mar. 31 st	Catch up		
T Apr. 5 th	Exam 2		
Th Apr. 7 th	Biology of Emotion	355-363	
T Apr. 12 th	Stress & Anxiety	364-385	
Th Apr. 14 th	Depression	464-475	2-4 Project Part 2 due
T Apr. 19 th	Learning & the brain	388-406	2-4
Th Apr. 21 st	Learning & the neuron	407-417	
T Apr. 26 th	Language		5 & 6
Th Apr. 28 th	Schizophrenia	476-490	
T May 3 rd	Project presentations		10-12
Th May 5 th	Projects presentations		
Exam			