

PSY 415 Brain and Behavior
Syllabus: Fall, 2013
John G. McCoy, Ph.D

Office: N-215
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Office Hours: Tues & Thurs; 10:00 am – 11:30 am or by appointment
Please let me know if/when you intend to stop by my office.
E-Mail: jmccoy1@stonehill.edu
Text: "Foundations of Behavioral Neuroscience" by Neil R. Carlson, 9th edition

What are the objectives of this course? The overall objective is to present a body of knowledge relating behavioral processes to biological mechanisms and, in the process, to:

1. Impart a fundamental understanding of the structure and function of the nervous system.
2. Impart an appreciation and understanding of the techniques used in relating biological and behavioral processes.
3. Provide sufficient background to allow you to read the current literature in behavioral neuroscience with a degree of confidence which you did not have before taking this course. This will include learning the "language" utilized by neuroscientists.
4. For those of you who intend to apply to graduate school or professional schools, this course will prepare you for advanced coursework and research opportunities in areas related to the biological basis of behavior.

What is the basic format of this course? Lecture with active student participation. Lectures are not intended to duplicate textbook material. In my view, a lecture serves several purposes. One purpose is to compliment, supplement and clarify some of the more difficult material found in your textbook. A second purpose is to present important material that your textbook fails to cover. A third purpose of my lectures is to bring this material to life in a way that your textbook cannot.

Although I will lecture in class, this does *not* mean that students are expected to play a passive role. This material is intellectually challenging. I encourage you to ask questions in class. I cannot address the points about which you are confused unless you ask questions. Interaction between students and instructor also has the effect of keeping both parties "on their toes."

We may also occasionally have class discussion of research articles, film clips, guest speakers, in class projects, etc. The overall goal is to teach you as much as I can in one semester about the brain and how it generates our behavior. Here the word 'behavior' is broadly defined to include sensations, perceptions, movement, motivational states such as hunger, learning, memory, emotion, etc.

What about class attendance? Though I do not take attendance, you will be held responsible for in-class material. Material from past classes will not be repeated nor will I give notes for missed classes. I expect you to attend and participate in class.

What is my policy on taking make-up exams? I will announce the date of an upcoming exam about two weeks in advance. I expect all students to take the exams on the targeted exam date. In general, there are only two valid excuses for missing an exam: 1) A documented serious illness or injury. Serious illness means that you are sick enough to be hospitalized, quarantined or ordered to stay in bed by a physician 2) Death in the immediate family (e.g., parents, siblings, grandparents). If you have a valid excuse, then I will give you a make-up exam when you are recovered.

How will my grade be determined in this class? Your letter grade will be based on 4 noncumulative exams throughout the semester. The exams will be weighted equally (25% each). There will be an optional research paper assignment. If you choose to do this assignment, it will be worth 20% of your grade and your test grades

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will then be worth 20% each. Directions for this paper will be provided separately.

Standard grading will be employed: A 93.3-100%; A- 90.0-93.2%; B+ 86.7-89.9%; B 83.3-86.6%; B- 80.0-83.2%; C+ 76.7-79.9%; C 73.3-76.6%; C-70.0-73.2%; D 60.0-69.9%; F less than 59.9%.

What is the format for the exams?

Each exam will contain a variety of types of questions (eg, fill-ins, matching, labeling of brain structures and functions, short-answer questions, identifications/definitions, brief essays). My goal in preparing examinations is to test your understanding of important concepts, and your ability to reason logically from material presented in class. Rote memorization of facts will not prepare you adequately for the exams. While memorization of certain factual information is necessary, it is *not* sufficient. Moreover, when a student obtains a genuine and deep understanding of a subject, that student tends to retain the important facts along the way. On short answer and essay questions, your answer must address each question specifically. Irrelevant material will not improve the answer to any question.

Are there rules for my behavior on the day of the exam?

Yes, there are a few rules for how you should behave on exam day. First, here is a list of no-no's:

No cell phones, no electronic devices, no ear plugs, no going to the bathroom during a test (empty your bladder before the exam), no food or drink in the classroom. Second, I will not hand out the exam until *everyone* has cleared their belongings off of their desk space. If *you* have your book and your notes open and spread out on the table at the time of the exam, then the *entire class* will have less time to complete the exam because of *you!* Finally, it should go without saying, no cheating or other forms of dishonest behavior (e.g., plagiarism on the optional paper). The consequence for cheating or plagiarism is that you will receive an F (0%) on that test or paper, which is likely to result in an F for your final test grade.

On Preparation: Read the chapters in the book that correspond to the lecture topics that I am covering that week. A great deal of complicated material is covered in this course, and considerable study will be required to master the topics. It is difficult to indicate precisely how much time you should spend studying for this class, as the necessary time will vary considerably from one person to the next. What I will say is that reading, studying, and thinking about your nervous system should be part of your daily routine this semester. Confusion is often the first step that must occur before you reach an understanding of the material. Once you understand the material, the next step is to master the material. However, it all starts with confusion. So don't be afraid of being confused, just asks lots of questions and study regularly and you will see the light. If you are not studying on a regular basis, then you will be so lost that you won't even know how to begin to ask a relevant question.

Study Sessions: There will be occasional, optional study sessions where you will have the opportunity to ask questions and get help from my teaching assistant. The study sessions are there for your benefit. Take full advantage of this resource.

Academic Dishonesty: All members of the Stonehill College community have the responsibility to be familiar with, to support, and to abide by the College's policy on academic honesty. This responsibility includes reporting known or suspected violations of this policy to the appropriate faculty member or to the Dean of Academic Administration's Office. Students caught cheating on an exam or plagiarizing another's work will be dealt with according to College regulations to the Student Handbook. Any plagiarized work will be assigned a grade of 0. Please consult your Handbook for examples of plagiarism.

Students with Disabilities: Stonehill College is committed to providing all students equal access to learning opportunities. The Office of Disability Services (ODS) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations. Students registered with the ODS and have a letter requesting accommodations, are encouraged to contact their professors early in the semester. Students who have, or think they may have, a disability (e.g. psychiatric, attentional, learning, vision, hearing, physical, or systemic), are invited to contact The Office of Disability Services for a confidential discussion at 508-565-1208.

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***Schedule of Lecture Topics and Textbook Reading Assignments**

What is biopsychology? Where did our ideas about the brain and behavior originate?	Ch. 1
Lateralization, language, and the split-brain	Ch. 13
Overview of the Major Structures of the Brain and Spinal Cord	Ch. 3
What is the function of each of these brain structures?	
What cells make up the nervous system?	Ch. 2
How do neurons send and receive signals? Conduction & synaptic transmission	Ch. 2

UNIT 1 EXAM

The major neurotransmitters and neuromodulators	Ch. 2 & 4
How do drugs influence synaptic transmission?	Ch. 4
Neurotransmitters, drugs and mental disorders:	
Schizophrenia	
Affective Disorders	Ch. 15
Attention Deficit / Hyperactivity Disorder (ADD, ADHD)	Ch. 16 (pp. 421-423)
Reinforcement: Discovery of electrical self-stimulation of brain	Ch. 12 (pp. 315-317)
Drug addiction and the brain's reinforcement circuitry	Ch. 16 (pp. 428-442)

UNIT 2 EXAM

Development of the nervous system	Ch. 3 (pp. 55-58)
Autism	Ch. 16 (pp. 417-420)
Other neurodevelopmental disorders	Ch. 14 (pp. 371-374)
The Autonomic Nervous Systems	Ch. 3 (pp. 70-73)
Stress and the HPA axis	Ch. 16 (pp. 422-428)
The Somatic Nervous Systems	
Somatic Sensory Systems:	Ch. 6 & 7
Somatic Motor systems	
Clinical disorders of the motor systems	Ch. 14 (pp. 374-384)
(ALS, Parkinson's Disease, Huntington's Disease, Multiple Sclerosis)	

UNIT 3 EXAM

Hunger, eating and health	Ch. 11
Sleep (and wake), dreaming and circadian rhythms	Ch. 8
Learning, memory and amnesia	Ch. 12
Alzheimer's disease	Ch. 14 (pp. 379-482)
Emotion	Ch. 10

UNIT 4 EXAM/FINAL

Additional Notes:

*While I intend to stick to the schedule of topics above, the schedule may require some modification as the semester unfolds.

Neuroscience majors in particular should also read **Chapter 5** on Methods and Strategy of Research. It would be good if everyone read it. The methods and techniques used by behavioral neuroscientists will be discussed throughout the entire course, so Chapter 5 applies to all four units.