



OTRP online

Office of Teaching Resources in Psychology

PHYSIOLOGICAL PSYCHOLOGY – PSYC3217

Fall, 2005

Instructor: **Dr. Amy Silvestri**

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Office hours: **Mondays 1:00-3:00, Tuesdays 3:30-4:30, and by appointment**

If you find that you need assistance with the material presented in this course or just want to talk about it, please see me. If you are concerned about your grade, please do not wait until the end of the semester to talk to me! If you cannot meet with me during office hours please make an appointment.

Course Objectives

Upon successful completion of this course, you should:

- Understand physiological psychology and its place in psychology and neuroscience
- Be familiar with the anatomy of the nervous system, including its organization and some of the major structures and their functions
- Know the more common techniques used to understand the physiology of behavior
- Understand the symptoms, brain damage, and treatment of Parkinson's Disease
- Be able to describe the structure and function of neurons and synapses
- Know the major neurotransmitters and their influence on behavior
- Be able to discuss drug addiction and the brain's reward circuits
- Know the biological mechanisms of sleep (including sleep disorders), stress, learning & memory, and emotion
- Be familiar with the biological basis of psychological disorders such as schizophrenia, depression, and anxiety

More generally, you should also be able to:

- Appreciate how the study of Physiological Psychology is relevant to your life
- Use the scientific terminology of Physiological Psychology appropriately
- Read and critically evaluate journal articles, web sites, and popular press articles about Physiological Psychology
- Appreciate the complexity of the brain and nervous system, particularly with respect to control of behavior, and understand some of the challenges faced by researchers

Textbook (required):

Pinel, J.P.J. (2006). *Biopsychology*, 6th edition. Boston: Allyn & Bacon.

I will place a copy of the text on reserve at Walsh Library if you are unable to purchase it.

Strongly recommended:

Mana, M.J. (2006). *Study guide for Biopsychology*, 6th edition. Boston: Allyn & Bacon.

There is also an on-line study guide for the textbook available at <http://www.abacon.com/pinel>. Click on "online study guide" and select a chapter. This on-line study guide is not as thorough as the print version, but some individuals may find it helpful.

Grading

Exams: There will be four exams administered throughout the semester. Each will contain multiple choice questions, terms for definition, and short essays. Make-up exams will only be given for compelling, documented reasons and must be taken within 72 hours of the scheduled exam. **Exams will be administered on the following dates: September 29, October 20, November 15, and December 16** (this exam is during finals week and will be given at 8:45am). There is no cumulative final exam; however, you should not assume that because you have been tested on something that it is no longer important. An understanding of material presented later in the semester will require knowledge of material presented earlier. *Exams will count as 80% of your semester grade.*

Writing Assignments: Four written assignments will be required throughout the semester: a web site summary, a journal article summary, a popular press article summary, and a response to an essay question. All assignments must be typewritten, double-spaced. *Writing assignments will count as 20% of your semester grade.* Details of the writing assignments are at the end of the syllabus.

Extra credit: You can earn extra credit by completing one additional writing assignment from each category. For each extra assignment you complete, I will add 2.5 points to your lowest exam score. The maximum number of extra credit assignments you can do is 4, for a total of 10 points added to your lowest exam. In order for an assignment to qualify for extra credit you must earn at least 70% on that assignment. Please indicate on the cover page for the assignment if it is for extra credit. Note that the due dates for extra credit assignments are the same as regular assignments. **I strongly recommend that you take advantage of this extra credit opportunity – it is the only form of extra credit available in this class.**

Final Course Grades: Letter grades will be assigned according to the following scale:

Percent	Letter Grade	Percent	Letter Grade
94 and up	A	74-76	C
90-93	A-	70-73	C-
87-89	B+	67-69	D+
84-86	B	60-66	D
80-83	B-	59 and below	F
77-79	C+		

These cutoffs are firm. Do not ask me to give you an extra assignment to raise your grade or to round up your grade – I will not do so under any circumstances.

Blackboard/course web site: I will post exam study guides, most class handouts, articles for the writing assignments, your grades, and reminders of upcoming exams and assignments on Blackboard. Please check the page regularly for announcements, updates, etc.

Policies and Procedures

Attendance: Attendance at each class is not mandatory. However, on some occasions I will cover material in lecture that is not in your textbook. In addition, I will review details of the writing assignments in class as the due dates approach. **You are responsible for all material covered in class whether you attend class or not.** Therefore, it is to your advantage to attend all classes. If you miss a class it is your responsibility to get notes from a fellow student. I cannot and will not give personal lectures or give out my lecture notes. I will, however, be happy to answer any questions once you have made the effort to find out what you've missed.

University closure: In the event that the University is closed, any exam or assignment scheduled for that date will be due at the next class meeting.

Etiquette: Please make every attempt to **be on time** for class. Arriving late is disruptive to me and to your fellow students. I understand that lateness is sometimes inevitable; if you are late, please enter the room quietly and take the first available seat.

Please **turn off all cell phones**, pagers, etc. before the start of class.

When you **send me an e-mail**, please give me specific information in the subject line, such as “exam 2” or “writing assignment question.” I receive quite a bit of spam, and I am likely to delete e-mails with subject lines such as “important” or “help.”

If you would rather be talking to your friends, sleeping, working on an assignment for another class, etc. than attending class, **DO NOT** come to class. These behaviors are disruptive, disrespectful, and unacceptable. They are rude both to your fellow students and me and will not be tolerated. I will not hesitate to call attention to any student who demonstrates any of these behaviors during class.

Computer usage: You are permitted to use computers in class, but only for class-related purposes – that is, taking notes. It is rude, distracting, and disruptive to be using AIM, surfing the web, checking e-mail, etc. during class. Because I have found this to be problematic in previous classes, I have instituted a “3 strikes and you’re out” policy for this class. This means that the first two times I notice students using their computers for non-class purposes, I will remind you about the policy but there will be no immediate consequences. After the third such incident, **all students** will be prohibited from using laptops in the classroom for the remainder of the semester. Therefore, if it is important to you to use your laptop for note-taking, it is to your benefit to (1) use your laptop for that purpose only and (2) encourage your classmates to do the same. I reserve the right to check your laptop screen at any time.

Incompletes: I cannot and will not give an **incomplete** for poor course performance; you are responsible for seeking help if you need it and for being aware of withdrawal deadlines.

Academic honesty: As in all Seton Hall classes, academic honesty is expected of all students. In this course, cheating includes, but is not limited to, the following behaviors:

- Copying, attempting to copy, and/or aiding another in the copying of answers from exams or assignments.
- Use of notes of any kind during an exam.
- Collaborating on writing assignments. Students may discuss writing assignments, but the work that each student turns in must be his/her own original work.
- Plagiarism (defined as taking ideas, writing, etc. from another and passing them off as one’s own) of writing assignments. If you have any questions about what constitutes plagiarism, please ask me before an assignment is due.

The penalty for a first offense of cheating of any kind will be, at minimum, a zero on the exam/assignment. The penalty for a second offense will be an automatic F in the course.

Disability Services Statement: Students at Seton Hall University who have a physical, medical, learning or psychiatric disability, either temporary or permanent, may be eligible for reasonable accommodations at the University as per the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act. In order to receive such accommodations, students must identify themselves at the Office of Disability Support Services (DSS), provide appropriate documentation and collaborate with the development of an accommodation plan. The DSS phone number is 973-313-6003. For further information, please go to our website at <http://studentaffairs.shu.edu/health/DisabilitySupportServices.html>

COURSE OUTLINE

- I. Introduction
 - A. What is Psychobiology?
 - B. Different Types of Research in Psychobiology
 - C. Divisions of Psychobiology
 - D. Animals and Research
 - E. An Historical Overview
 - F. Critical Thinking about Psychobiology

Text readings: Chapter 1

- II. The Anatomy of the Nervous System
 - A. General Layout of the Nervous System
 - B. Cells of the Nervous System
 - C. Neuroanatomical Techniques and Directions
 - D. The Spinal Cord
 - E. The Five Major Divisions of the Brain
 - F. Major Structures of the Brain

Text readings: Chapter 3

- III. Research Methods in Psychobiology
 - A. Methods of Visualizing the Living Human Brain
 - B. Recording Human Psychophysiological Activity
 - C. Invasive Physiological Research Methods
 - D. Pharmacological Research Methods
 - E. Brain Damage and Repair
 - F. Parkinson's Disease

Text readings: Chapter 5, sections 5.1, 5.2, 5.3, and 5.4 only; Chapter 10, pages 241 (Parkinson's Disease) and 247 (MPTP model of Parkinson's Disease) only

September 29: **EXAM 1**

- IV. Neural Conduction and Synaptic Transmission
 - A. The Neuron's Resting Membrane Potential
 - B. Generation and Conduction of Postsynaptic Potentials
 - C. Integration of Postsynaptic Potentials and Generation of Action Potentials
 - D. Conduction of Action Potentials
 - E. Synaptic Transmission
 - F. Neurotransmitters
 - G. Pharmacology of Synaptic Transmission

Text readings: Chapter 4

- V. Drug Addiction and the Brain's Reward Circuits
 - A. Basic Principles of Drug Action
 - B. Role of Learning in Drug Tolerance and Drug Withdrawal
 - C. Commonly Abused Drugs
 - D. Biopsychological Theories of Addiction
 - E. Intracranial Self-Stimulation and the Pleasure Centers of the Brain
 - F. Neural Mechanisms of Motivation and Addiction

Text readings: Chapter 15October 20: **EXAM 2**

- VI. Sleep, Dreaming, and Circadian Rhythms
 - A. Physiological and Behavioral Events of Sleep
 - B. REM Sleep and Dreaming
 - C. Why Do We Sleep?
 - D. Circadian Sleep Cycles
 - E. Effects of Sleep Deprivation
 - F. Neural Mechanisms of Sleep
 - G. The Circadian Clock
 - H. Drugs that Affect Sleep
 - I. Sleep Disorders
 - J. Effects of Long-Term Sleep Reduction

Text readings: Chapter 14

- VII. The Psychobiology of Stress
- A. Physiological Components of the Stress Response
 - B. Stress and Cardiovascular Function
 - C. Stress and Digestion
 - D. Stress and Immune Function
 - E. Stress and Neuronal Function

Text readings: Chapter 17, section 17.3 onlyNovember 15: **EXAM 3**

- VIII. The Psychobiology of Learning, Memory, and Experience
- A. Amnesic Effects of Bilateral Medial Temporal Lobectomy
 - B. Amnesia of Korsokoff's Syndrome
 - C. The Hippocampus and Memory for Spatial Location
 - D. Synaptic Mechanisms of Learning & Memory
 - E. Effects of Experience on Neurodevelopment
 - F. Neuroplasticity in Adults

Text readings: Chapter 11, sections 11.1, 11.2, 11.6, and 11.8 only; Chapter 9, sections 9.3 and 9.4 only

- IX. The Psychobiology of Emotions and Mental Illness
- A. Biopsychology of Emotion
 - B. Brain Mechanisms of Human Emotion
 - C. Fear Conditioning
 - D. Schizophrenia
 - E. Affective Disorders
 - F. Anxiety Disorders

Text readings: Chapter 17, sections 17.1, 17.4, and 17.5 only; Chapter 18, sections 18.1, 18.2, and 18.3 onlyDecember 16, 8:45am: **EXAM 4**

Please note the date of the final exam. No finals will be given early – no exceptions!

Writing Assignments**General directions for all assignments**

I will take into account the following when grading assignments:

- **Completeness of the assignment:** Did you follow the directions? Did you do what you were asked, or are certain components missing or questions left unanswered?
- **Neatness of the assignment/surface quality:** Is the assignment prepared and presented neatly? Does it appear that you gave it proper time and attention, or does it appear that it was a last-minute effort? Are there numerous spelling/grammatical/typographical errors?
- **Level of mastery/depth of work:** Is it clear that you understand what you are writing about? Is it evident that you have a firm grasp of course material? Could an interested college student/adult who has not taken the course understand what you are saying?

Do not quote the web site or article that is to be summarized – use your own words to explain the article. If you encounter difficulty in understanding the material, please see me and I will help you.

Basic formatting for all assignments:

- approximately 4 pages long (at least 3 *full* pages but no more than 6, not including cover page)

- typed, double-spaced
- all margins 1 inch
- standard font style and size (no Courier New)
- cover page with your name and description of assignment
- work should be proofread carefully (don't rely on the spell-checker!)

Deadlines:

Please note that the due dates for each assignment vary. Assignments are due at the start of class on the date specified. I will deduct 10% of the total value of the assignment each day it is late and will not accept assignments more than 48 hours late.

You must complete 1 assignment from each of the 4 groups listed below:

Group 1: Web site summary; due September 22

Each of these requires that you visit a specified web site related to Physiological Psychology. For each of these, browse the site thoroughly and answer the following questions:

- Who created the web site? (person, professional organization, etc.)
- What is the purpose of the web site? Who is the target audience? (If this is not explicitly stated, use your own judgment.)
- What type of information is presented?
- How does the information in this web site relate to class notes and the text? (Be specific!)
- What additional information (that is not in the class notes and the text) did you find on this web site? (Again, be specific!)
- What did you learn about Physiological Psychology from this web site?
- **Do not quote the web site** – use your own words to explain it.

Choose from one of the following web sites:

The Society for Neuroscience: <http://www.sfn.org>

Dr. Eric Chudler's Neuroscience pages: <http://faculty.washington.edu/chudler/introb.html>

A History of Psychosurgery: http://www.epub.org.br/cm/n02/historia/psicocirg_i.htm (NOTE: this web site is very interesting, but also very temperamental – some days it works, other days it doesn't)

Psychosurgery: <http://en.wikipedia.org/wiki/Lobotomy>

Group 2: Journal article summary; due dates vary (see below)

These are summaries of selected journal articles in the field of Physiological Psychology. They will be available in Blackboard as the due dates approach. Each article relates to a topic we will cover in the text or lecture. For each summary, include the following information:

- What is the topic of the article, and why is it important? Who wrote the article? Is the article an *empirical article* (reporting the results of a study that the authors conducted) or a *review article* (a summary and integration of the results of many previous studies that have been done on a particular topic)?
- If the article is an *empirical article*, what is the purpose or goal of the study being described? Do the authors make specific hypotheses? If so, what are they? Who were the subjects/participants? Describe the methods/procedures used. What were the main findings? Did the findings support the researchers' hypotheses? What do the researchers make of the findings – that is, what do they conclude?
- If the article is a *review article*, summarize the major themes or patterns of findings that the authors discuss. What do the authors conclude about this area of knowledge based on their review of the research in it? What do the authors say still needs to be done?
- Explain how what you've read in this article fits in with what you know from class notes and the text (be specific!).
- Identify 3 specific things (facts, ideas, etc.) that you learned about Physiological Psychology by reading this article.

- *Do not quote the article* – use your own words to explain it.

Article 1; summary due October 4:

Leentjens, A.F.G. (2004). Depression in Parkinson's disease: conceptual issues and clinical challenges. *Journal of Geriatric Psychiatry & Neurology*, 17, 120-126.

Article 2; summary due October 25:

de la Fuente-Fernandez, R. & Stoessl, A.J. (2004). The biochemical basis of the placebo effect. *Science and Engineering Ethics*, 10, 143-150.

Article 3; summary due November 17:

Marshall, H.M., Allison, K.C., O'Reardon, J.P., Birketvedt, G., & Stunkard, A.J. (2004). Night eating syndrome among nonobese persons. *International Journal of Eating Disorders*, 35, 217-222.

Article 4; summary due December 8:

Nemeroff, C.B., Heim, C.M., Thase, M.E., Klein, D.N., Rush, A.J., Schatzberg, A.F., et al. (2003). Differential responses to psychotherapy versus pharmacotherapy in patients with chronic forms of major depression and childhood trauma. *Proceedings of the National Academy of Sciences*, 100: 14293-14296.

Group 3: Popular press article summary; due November 8

These assignments require that you summarize a popular press article relating to Physiological Psychology. *Do not quote the article* – use your own words to explain it.

- Find a recent popular press article (*Time*, *Newsweek*, *Star-Ledger*, etc., published in 2005 – an electronic version is fine) relating to Physiological Psychology. Attach a copy of the article to the assignment.
- Summarize the article.
- Why did you choose the article? (That is, you probably found it interesting, but why?)
- How does the article relate to topics we've covered in class?
- Based on the class notes and text, how accurate is the article in its explanation of Physiological Psychology topics?

Group 4: Essay question; due dates vary (see below)

Provide a detailed answer to the essay question given. When applicable, discuss specific experiments that were performed and their results. Use your text and class notes as sources.

Question 1; due October 4

Describe the 6 areas of biopsychology and give an example of the type of research that might be done by a biopsychologist in each area. Compare and contrast the areas – how are they alike? How are they different? If you were a biopsychologist, in which division would you specialize and why?

Question 2; due October 25

What is the evidence that dopamine is involved in the brain's reward system? Include descriptions of and results from relevant experiments.

Question 3; due November 17

Describe narcolepsy and at least 2 other sleep disorders and what we know about the biology of each.

Question 4; due December 8

Discuss the research on adult neurogenesis – what it is, when it occurs, etc. (Be sure to include information from both the textbook and lecture.)

A note on plagiarism: Plagiarism, defined as the act of taking ideas, writing, etc. from another and passing them off as one's own, will not be tolerated. Plagiarism includes quoting or even paraphrasing without citation, as well as substituting synonyms into someone else's text and then retyping it or simply rearranging the order of words. Follow the four-word rule: if 4 or more words in a row are the same as the original source, it's plagiarism. If you have any questions about what constitutes plagiarism, please see the APA Publication Manual or ask me before an assignment is due. *I take plagiarism very seriously*, and I expect that you will as well.

The penalty for a first offense of plagiarism (or any other kind of cheating) will be, at minimum, a zero on the exam/assignment. The penalty for a second offense will be an automatic F in the course.