Behavioral Neuroscience

NS 341, PSY 341, BIO 433

Spring 2012

Instructor: Dr. Robin McGovern

Office Location:	Hoyt Sciences Center- Room 136	
Office Hours:	Wednesday and Friday Thursday By appointment	10:30 am – 11:30 am 1:00 pm – 2:00 pm
Phone Number:	(724) 946-7358	
E-mail Address:	mcgoverl@westminster.edu	
Class Location:	Hoyt G22	
Class Hours:	Monday, Wednesday and Frida	y 9:20 – 10:20 am
Laboratory Hours:	Monday 2:00 – 5:00 pm or Tuesday 2:00 – 5:00 pm	
Required Text:	Biological Psychology 6 th Edit 2010	ion; Breedlove, Watson and Rosenzweig, Sinauer Associates,

Course Description:

This course is intended as an introduction to the study of the anatomy and physiology of the brain. It is my hope that you will gain an appreciation for the biological basis of everyday behaviors, such as, sleeping, thinking, moving, and learning. Additionally, you will learn about the physiological correlates of many psychological and neurological disorders, such as, Parkinson's Disease, Huntington's Disease, stroke, depression, schizophrenia and drug addiction. The aim of the class is for students hoping to have careers in many different areas of psychology to gain an appreciation of the pervasive impact of physiological variables on psychological functioning.

Course Objectives:

After completing this class, students should be able to:

- 1. Describe some the various methods used to study the biological basis of behavior.
- 2. Use scientific terminology appropriately in reference to biology and behavior.
- 3. Identify the divisions of the brain and nervous system and describe their functions.
- 4. Describe the structure of neurons and how neural impulses are generated.
- 5. Describe the structure and functioning of synapses.
- 6. Identify the major neurotransmitters and discuss the impact of each on behavior.
- 7. Discuss the role of the brain and nervous system in health and disease.
- 8. Apply the principles of biopsychology to better understand behavior.

9. Discuss how biopsychological knowledge can be used to address a wide range of behavioral and physiological problems.

- 10. Demonstrate and describe proper care and handling of laboratory animals.
- 11. Discuss some of the ethical challenges of conducting research with animal models.
- 12. Develop further competency in accessing and understanding the primary literature in science fields.

EVALUATION

Course Assessment

- Student knowledge of all objectives will be evaluated using multiple choice, fill in the blank, labeling and essay quizzes and exams.
- The laboratory component of this course will be used to further assess objectives 1, 2, 4, 5, 7, 8, 9, 10 and 11.
 - Objective 3 will be assessed in a laboratory exercise involving dissection of a sheep's brain.
 - Objectives 4 and 5 will be assessed in a laboratory exercise utilizing a software program that simulates a neuron with various manipulations to the components involved in maintaining the membrane potential and in generating the action potential.
 - Objectives 6, 7, 8,9, and 10 will be assessed in a lab evaluating performance on the Morris Water Maze task following injections of various types of compounds.
 - Objectives 7, 8, 9 and 12 will be assessed in labs exercises on a case studies of neurodegenerative disorders.
 - Objectives 10 and 11 will be assessed in a laboratory exercise that will challenge students to consider and discuss various case studies involving the ethical use of laboratory animals. Further, working knowledge of best laboratory practices with animals will be assessed in quizzes and exams
 - Objectives 6, 7, 8, 9 and 12 will be assessed in a laboratory exercise that will require students to synthesize all the material covered over the course of the semester to determine possible explanations for common neurobiological ailments.
 - Objective 12 will be assessed in a laboratory exercise that will mimic a journal club discussion.

Course Evaluation: Your final grade will be based on the total number of points you accumulate out of 800,

which can easily be converted to a percentage and letter grade. Your grade will be based on a combination of scores from Participation and Attendance, 1 out of class quiz, 4 in class quizzes, 13 laboratories, 2 non-cumulative in-class exams, and 1 cumulative in-class final. The breakdown will be as follows:

Task	Points per Task	Total Points
Syllabus Quiz	10	10
Plagiarism Quiz	10	10
Participation and Attendance	30	30
Laboratories	20	260
3 In Class Quizzes	30	90
2 Non-Cumulative In Class Exams	100	200
One Cumulative In Class Final	200	200
TOTAL		800 points

What do I have to do to get and A?

For this class: A: 92.5-100% A-: 89.5- 92.4% B+: 87.5-89.4% B: 82.5-87.4% B::79.5-82.4% C+: 77.5-79.4% C: 72.5-77.4% C-: 69.5-72.4% D+: 67.5-69.4% D: 62.5-27.4% F: below 59.4% Attendance and Tardiness: I will be taking attendance daily and your attendance in class will contribute to your final grade. You are permitted to miss 3 classes with no penalization to your attendance grade. There are no differences between excused and un-excused absences, so use your 3 free skips wisely for when you may really need them. If you did not come to class on the first day, you only have 2 more free skips. Additionally, any combination of 3 late arrivals/departures will be the equivalent of missing an entire class period/

Students who have perfect attendance and never arrive late to class or lab will receive 5 extra credit points

If you should miss a class, it is your responsibility to get notes from a classmate (it would be best if you got notes from a number of different students). I suggest that within the first few days of class you befriend a number of your classmates and exchange contact information. DO NOT email me to ask me what you missed in class, I will not respond to these types of emails.

Quizzes: There will be 3 in class quizzes on the assigned readings and topics that we will be or have already discussed in class. Quizzes will be given at the start of class, if you are late, you will not be given extra time to complete the quiz. Additionally, no makeup quizzes will be given.

Laboratories: The lab is designed to complement and extend the knowledge you will gain in the lecture component of Behavioral Neuroscience, and counts for ~ 30% of your course grade. Attendance and participation is expected at all laboratories. For each lab, you will complete an assignment worth 20 points. Unless previously approved by Dr. McGovern, you must attend the lab for which you are registered.

Exams: Your exam grade will be based on the number of points you earn during 2 *non-cumulative exams and* 1 *partially-cumulative exam*. All exams will consist of objective questions (i.e. multiple choice, true/false and matching), fill in the blank, and short answer essays that may be answered with 3-4 sentences. The exams will cover material from the text (not necessarily covered in class), lectures, class room discussions, guest lecturers, films/movies, and other assigned readings. Exams will not be timed however; you should be able to complete the exam within the 60 minute class period, **exceptions will only be made to those with challenges documented with the Learning Center.**

CLASSROOM POLICIES

Special Accommodations: If you have special needs that may affect your course-work, please come and speak with me. Accommodations per college policy will be made for those with special needs documented with the Learning Center and college administration.

Email: I will be communicating with the class via email. You should all have a Westminster email account that you check regularly (i.e., at least once a day); **this is the only email that I will use to communicate with you.** Email is also the best way to get in touch with me. If you email me, I will generally respond to your email within 24 hours during normal working hours (i.e., 8 am - 5 pm).

Course Materials: All course (lecture and lab) materials will be available on the R: drive under the **NS 341, NS 341 L1, and NS 341 L2 folders**. Even if you registered for the course under PSY 341 or BIO 433, you will have access to the NS341 and NS 341 L1 or NS 341 L2 folders. These folders are the only place where I will put course information.

General Class Room Behavior: We are all adults in this course, and I will treat you as such and expect you to act accordingly.

- * If you are using a computer to take class notes, all sounds must be silenced.
- * Do not to engage in activities that are not related to class, i.e., texting, other homework, chatting with neighbors, etc.
- * No headphones or portable listening devices are to be used during class.
- * Cell phones, pagers and Blackberry's must be kept on silent and put away during class.
- * Be prepared for class, *it is your responsibility to print the materials prior to each class*.

ASSIGNMENT POLICIES:

Missed Exams: No make-up exams will be given for any reason during the semester.

1 Missed Exam: If you fail to take any one of the 2 exams at the scheduled time for any reason, your grade on the final exam will count twice (once for the final exam itself and once for the missed exam

2 or More Missed Exams: If you miss more than one exam, you must obtain written permission from the Dean of Students to take a make-up exam at the end of the semester. In the event that you obtain permission from the Dean, all other make up exams will be given during my office hours on Wednesday, December 14, 20011.

Note: It does not matter if you miss 2, or 3 exams throughout the semester, you will only have 1 hour to complete all make-up exams on December 14, 20011.

Missed Final Exam: No make-up final exams will be given. Alternative final times will only be given if scheduling conflict arise per university policy and then only with documentation from the Dean of Students.

Late Assignments: Late assignments will not be accepted for any reason, unless previously discussed with Dr. McGovern.

Academic Dishonesty: All students should familiarize themselves with Westminster's code of behavior, definitions of academic dishonesty and be aware of the possible ramifications of academic dishonesty. *Academic dishonesty will not be tolerated in any form.* Anyone caught in any one of these forms of academic dishonesty will receive a "zero" for that assignment or exam with no opportunity to make up those lost points. Any subsequent violations will result in a grade of "F" for the course and the dean and department chair will be notified of this behavior.

Online Plagiarism Quiz: Visit the following website: <u>http://www.indiana.edu/~istd/overview.html</u>, complete the tutorial on plagiarism and the subsequent quiz. Once you have successfully completed the quiz, print out the certificate, sign it, scan in into your computer and submit it to me via the R: drive. Proof of successful completion of this assignment (i.e., the certificate) is due by **Monday, January 23, 2012.**

Tips for Success in Dr. McGovern's Classes:

- 1. Read the material before class.
- 2. Ask questions...especially if you are confused.
- 3. Don't be lazy.
- 4. Keep all homework, lab work, quizzes and exams.
- 5. Keep track of your grade.
- 6. Use common sense.
- 7. *Remember we are all working together.*
- 8. Do not make your emergency, my emergency.

TENTATIVE COURSE SCHEDULE

Note: I will do my best to stick to this schedule, but changes may be made depending on how the students and instructor feel about the material.

Date	Торіс	Chapters in Text	Assignment
18 January	Intro to Behavioral Neuroscience	Chapter 1	Plagiarism Quiz Due by January 23
Unit 1: Foundations of Physiological Psychology			
January 20	Intro to Behavioral Neuroscience	Chapter 1	Syllabus Quiz
January 23	Structure of the Nervous System	Chapter 2	
January 25	Structure of the Nervous System	Chapter 2	
January 27	Structure of the Nervous System	Chapter 2	
January 30	Structure of the Nervous System	Chapter 2	
February 1	Structure and Function of Cells in the Nervous System	Chapter 3	
February 3	Structure and Function of Cells in the Nervous System	Chapter 3	
February 6	Structure and Function of Cells in the Nervous System	Chapter 3	
February 8	Structure and Function of Cells in the Nervous System	Chapter 3	Quiz 1
February 10	Neurotransmitters and Neuropharmacology	Chapter 4	
February 13	Neurotransmitters and Neuropharmacology	Chapter 4	
February 15	Neurotransmitters and Neuropharmacology	Chapter 4	
February 17	Neurotransmitters and Neuropharmacology	Chapter 4	
February 20	Hormones	Chapter 5	
February 22	Hormones	Chapter 5	
February 24	EXAM 1	Chapters 1-5	EXAM 1
Unit 2: Sensation, Perception and Motivated Behaviors			
February 27	Vision	Chapter 10	
February 29	Vision	Chapter 10	
March 5-9	SPRING BREAK- NO CLASS		
March 12	Vision	Chapter 10	
March 14	Vision	Chapter 10	
March 16	Pain	Chapter 8	

March 19	Pain	Chapter 8	
March 21	Reproductive Behavior	Chapter 12	Quiz 2
March 23	Reproductive Behavior	Chapter 12	
March 26	Reproductive Behavior	Chapter 12	
March 28	Sleep and Biological Rhythms	Chapter 14	
March 30	Sleep and Biological Rhythms	Chapter 14	
April 2	Sleep and Biological Rhythms	Chapter 14	
April 4	EXAM 2	Chapters 10, 8, 12, 14	EXAM 2
April 6-9	April 6-9 EASTER BREAK- NO CLASS		
Unit 3: Learning and Neuropsychological Disorders			
Tuesday April 10	Learning and Memory	Chapter 17	
April 11	Learning and Memory	Chapter 17	
April 13	Learning and Memory	Chapter 17	
April 16	Learning and Memory	Chapter 17	
April 18	Degenerative Disorders	Chapter 7, 14	
April 20	Degenerative Disorders	Chapter 7, 14	
April 23	Student Research Day- NO CLASS		
April 25	Degenerative Disorders	Chapter 7, 14	Quiz 3
April 27	Psychopathology	Chapter 16	
April 30	Psychopathology	Chapter 16	
May 2	Psychopathology	Chapter 16	
May 4	Psychopathology	Chapter 16	
We do not have	time to cover all of the psychiatry	ic disorders discussed in	chapters 15 and 16.

We do not have time to cover all of the psychiatric disorders discussed in chapters 15 and 16. Therefore, we will be covering certain sections of chapters 15 and 16 depending on the interests of the class. As we get closer to the time, we will be taking a classroom vote to see which disorders the class would like to learn about. Monday, May 7, 2012

Monday, May 7, 201
3:00 – 5:30 pm
Final Exam

LABORATORY SCHEDULE

Note: I will do my best to stick to this schedule, but changes may be made depending on how the students and instructor feel about the material.

Date	Торіс
January 23/24	Research Ethics
	Responsible Use and Care of Laboratory Animais
January 30/31	Sheep Brain Dissection
February 6/7	Neurons in Action
February 13/14	Morris Water Maze
February 20/21	Brain Awareness Week Planning
February 27/28	Mock Journal Club
March 5/6	SPRING BREAK- NO LAB
March 12/13	Brain Awareness Week
March 19/20	Reproductive Behavior
March 26/27	Circadian Rhythms
April 2/3	Win-Stay/Win-Shift Lab
April 9/10	EASTER BREAK - NO LAB
April 16/17	MPTP
April 23/24	Horse Lab
April 30/May 1	Drug Side Effects

Grade Tracking Sheet for Your Records:

Task	Points per Task	Earned Points per Task
Syllabus Quiz	10	
Plagiarism Quiz	10	
Lab 1- Ethics and Lab Animals	20	
Lab 2- Sheep Brain Dissection	20	
Lab 3- Neurons in Action	20	
Lab 4- Morris Water Maze	20	
Lab 5- Brain Awareness Week Planning	20	
Lab 6- Mock Journal Club	20	
Lab 7- Brain Awareness Week	20	
Lab 8- Reproductive Behavior	20	
Lab 9- Circadian Rhythms	20	
Lab 10- Win-Stay/Win-Shift	20	
Lab 11- MPTP	20	
Lab 12- Horse Gait Lab	20	
Lab 13- Drug Side Effects	20	
Quiz 1	30	
Quiz 2	30	
Quiz 3	30	
Exam 1	100	
Exam 2	100	
Cumulative Final	200	
Participation and Attendance	30	
Extra Credit	XXX	
TOTAL	800	