HTHS 2810 PSYCH 2810 ZOOL 2810
Introduction to Neuroscience

Fall 2008 MWF 10:00 – 10:50AM
Location: Science Lab Building, Room 427

Professors: Dr. Matthew Schmolesky and Dr. Barbara Trask
Professor's e-mail: mschmolesky@weber.edu and btrask@weber.edu
**(This is BY FAR the best way to contact us)
Office Phones: *Schmolesky*: 801-626-8745 *Trask*: 801-626-6169
Office Hours: *Schmolesky*: 1:00 – 2:00 PM daily; also by appointment; *Trask*: Tuesdays 10 AM-Noon, Wednesdays 2-4 PM and Fridays 11 AM-Noon, and by appointment.
Office Locations: *Schmolesky:* SS 356 *Trask:* SL 407
Class Web Site: http://online.weber.edu/

Which professor to contact? Because neuroscience is an interdisciplinary field, this course will be led by two faculty members. You may contact either professor during any part of the course, but the syllabus schedule (see below) indicates to you which professor will cover which topics and, therefore, whom would be best to contact regarding specific material or exams.

I. Textbook: a) Bryan Kolb and Ian Whishaw. AN INTRODUCTION TO BRAIN AND BEHAVIOR, 2ND edition. NY, NY: Worth Publishers, 2006. b) Lodish *et al.* MOLECULAR CELL BIOLOGY, 6th edition. NY, NY: Worth Publishers, 2008. Note: supplemental reading materials will either be handed out in class or made available through the WSU Library e-reserve. Two copies of the Lodish text will also be found on reserve in the library.

II. Course Objectives

A. To explore the structure-function relationship of the human central nervous system and peripheral nervous system.
B. To explore the biological basis of human (and animal) behavior, thinking, emotion, memory, and perception.
C. To introduce students to the field of neuroscience, its different specializations and sub-areas, and methods used in research. This class covers a wide range of topics including: cellular and sub-cellular structures and processes, basic genetics as it applied to neuroscience, neuronal signaling, synaptic anatomy and physiology, function and dysfunction of the central nervous system, the biology of sensation and movement, cognitive functions and neurological disorders.
D. To integrate theories and research with real-life medical applications so as to make the study of neuroscience both interesting and meaningful to the students.
E. To encourage students to prepare themselves for the real-life application of their degree if they focus upon the biological and physiological aspects of human function and dysfunction by educating them about different career paths (e.g. clinical, research, industry, etc.).

F. To appreciate the depth of knowledge currently available concerning the biological basis of behavior and the societal advantages provided by such knowledge in terms of understanding, prediction, and intervention (e.g. through biomedical and psychological treatment of diseases and disorders).

III. Course Grade

A. Examinations

1. Five exams will be taken during the course of this semester. Each exam is non-comprehensive and constitutes 16% of your final grade. Two writing assignments will be given (see below) and each will be worth 10% of your final grade.

2. The fifth and final exam will be taken on Dec. 6-11. No exams may be taken after Thursday Dec. 11.

3. All exams will be taken in the Science Testing Center. You will have 2 days to take each exam. Please note the testing center hours listed on the web site (currently listed as: 7:30am to 8pm Monday to Thursday, 7:30am-4:30pm Friday, 9am-4pm Saturday). YOU MUST ARRIVE AT LEAST ONE HOUR before the testing center closes or they will not permit you to take the exam. You must have your student ID and 10 cents for the scantron to take the exam.

B. Make-up Examinations/Missing Exams

If you know of a conflict with the exam schedule, you may take ANY exam early but **must notify one of us in writing of your intention to do so as early as possible.** IF FOR ANY REASON YOU MISS AN EXAM you must notify ONE OF US in writing immediately. You may take the exam one day late (for a 10 point deduction) or two days late (for a 20 point deduction). You will not be able to take an exam three or more "business days" (i.e. days the testing center is open, Mon.-Sat.) after the scheduled dates and will receive a zero for this exam.

C. Writing Assignments

Two writing assignments (800-1000 words each) will be given during the semester. **These assignments are not optional – you must complete them to finish the course.** Assignments are due by classtime on the due date and should be provided both digitally and in hardcopy (typed, not hand-written). Each assignment is worth 10 % of your final course grade. Late assignments will be graded as follows: One day late = 10 point deduction; two days late = 20 point deduction. Three or more days late = we will grade the paper on a pass/fail basis where a "pass" will allow you to complete the course but you will get no points towards your grade. Plan to turn your assignment in **the day prior to the due date**, just in case you have any problems with computer connections.

Assignment One: Due October 10th; topic to be announced
Assignment Two: Due December 3rd; topic to be announced.

D. Extra Credit Opportunities

Each exam will have an extra credit opportunity included with the questions. These are questions that require you to integrate information and go above and beyond what you normally would learn for the exam. You may earn up to 4 percentage points for each exam through the exam extra credit. In addition, you have the option to do "Exam Corrections" for Exams One to Four (not Five); instructions on how to do these will be provided.

E. Grading Scale

The course grade will be assigned according to the scale indicated below:

Numeric Score	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
60-66	D
Below 60	E

F. Honors Component

Subject to approval from the instructors and the Honors office, students may elect to take Introduction to Neuroscience as an honors course. In addition to the regular course assignments, honors students will write three reports (3-4 pages each) tying the course material to a topic of their choice (e.g. Alzheimers) using primary research articles and other materials. At the end of the semester they will each give a 10-15 minute oral report on their topic, integrating information from their three written reports and additional materials. Each of the four assignments will count as 25% of the Honors Component grade, which is entirely separate from the overall course grade.

Schedule for Honors Component assignments:
Week 1 - pick a topic
Week 2 through 9 - write three reports, 1 report every 3 weeks
Week 10 to 14 – integrate information and prepare oral report
Week 14 - give oral report

IV. Course Outline:

GENERAL COURSE OUTLINE:

CLASS DATES	TOPIC
Weeks 1-3	Introduction to the course Nervous system structure and function. Focus on *Neurobiology and Anatomy*
Exam 1	9/13-9/15
Weeks 4-6	The basics of molecular neurobiology: sub-cellular structure, intracellular processes, genetic expression, and genomic techniques. Focus on *Cellular and Molecular Neuroscience.*
Exam 2	10/4-10/6
Week 7-9	Biomembrane structure and function. Neuronal signaling: how neurons receive, integrate and transmit information. Focus on *Systems Neuroscience*
Exam 3	10/25-10/27
Weeks 10-12	Brain function: How the brain processes information and provides abilities: sensation, memory, and cognition. Focus on *Cognitive/Behavioral Neuroscience*
Exam 4	11/15-11/17
Week 13-15	Brain dysfunction: neurological disorders, cutting-edge neuroscience research, and biomedical treatment. Focus on *Medical/Clinical Neuroscience*
Exam 5	12/10

******NOTE: The detailed course schedule is attached***

V. Additional Information

A. Attendance

Attendance is not required for this class but is STRONGLY encouraged and will be monitored. Anything discussed in class may be included on an exam, even if that information is not found in the textbook or online resources. Thus, it is in everyone's best interest to attend. **IF you miss class, there are two things you can do to get the material you missed. You may get the outline from the PowerPoint on WebCT, and/or you may get notes from a classmate. **DO NOT email us or come to our offices to ask what you missed.** It is your responsibility to attend class or, if you cannot, contact a classmate to catch up. Please DO email us or come to our offices for any other purpose if you think we can be of help.

B. Class Contact

Often it is necessary to miss a part or all of class. When that happens, or when you have questions that you cannot answer on your own, it is helpful to have the name and number of another student in class that you can contact. Please use the

space below to write down the name, email, and phone number of at least two students in this class. AND you can use WebCT to email anyone in the class.

CONTACT INFORMATION FOR CLASSMATES:

Name	Phone or Email
Name	Phone or Email

C. Class Courtesy

This is a large class, so please be courteous of others when coming late to or leaving early from class. Do not make a habit of arriving late or leaving early as many (including your instructors) find it very distracting. The following behaviors are rude when they take place during class time: a) holding private conversations, b) sleeping, c) reading other material, or d) doing other work. Drinking (but not eating) in class is permitted, so long as it is not disruptive to the learning environment. ****POLICY FOR ELECTRONIC DEVICES: ALL ELECTRONIC DEVICES ARE TO BE OFF AND OUT OF SIGHT/REACH DURING CLASS.** Any disruptive behavior will be addressed immediately, and if the behavior does not cease, you will be asked to leave class. **Students repeatedly engaging in rude behavior will be counseled to drop the course.**

D. Grade Appeals

If, after receiving an exam back during class, you think a mistake has been made in the grading of **your** exam, please do not ask about this during class. Write/type your questions/concerns, and provide reference to specific pages from the book to support your concern, and turn these questions in to one of your instructors at the end of the class period. You will receive a response, and any grade adjustment necessary, within one week. You may also do this with writing assignments. THIS IS THE ONLY WAY that your concerns will be addressed. ONLY written questions and comments THAT YOU SUPPORT will be evaluated.

E. Academic Dishonesty/Plagarism/Cheating

We encourage students to work and study together whenever possible. **However, students must hand in their own work.** Whenever you try to pass off someone's work that is not your own, that is cheating. If you cheat on ANY assignment (even extra credit), you will receive a grade of **E (Failing) for the course**. Plagiarism is when you represent someone else's ideas or words as your own. For a very detailed description of plagiarism, please go to the web site and review the PLAGIARISM description. You are responsible for knowing what constitutes plagiarism. ANY plagiarism (even unintentional) will result in a failing grade in the course. Please refer to the following web site for a complete

listing of infringements that constitute cheating: http://documents.weber.edu/ppm/6-22.htm.

F. Completing all Work

All assignments must be completed in order for students to pass the course. **Students will receive a grade of I (incomplete) if any work is missing when the final grades are computed.** The grade of I will turn into a UW if the work is not completed in a timely fashion as determined by your instructors.

G. Students with Disabilities

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 181 of the Student Service Center. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary.

H. Students' Rights and Responsibilities

Please refer to the following web site for a complete listing of all WSU student rights and responsibilities: http://documents.weber.edu/ppm/6-22.htm

VI. Testing Center Hours

All exams may be taken in the Science Lab Testing Center (located on the southeast side of the 2nd floor of the Science Lab building. SL 229). In order to take an exam, you must show up on the correct date at the appropriate times (NOTE: you must arrive at least one hour before closing) with a form of picture ID and 10 cents for the scantron. You will not be allowed to take the exam without a picture ID or if you show up after hours. Please contact the testing centers to be sure of their current hours.

VII. Grade Record

Please keep a record of the grades you receive on each assignment. You may also access your grades using the MY GRADES tool on WebCT. Grades are updated within 1 week of the end of every exam.

NOTE: The course syllabus provides a general plan for the course. We are committed to following the syllabus but there is no guarantee that we will. Altering the syllabus may also mean changing the nature or timing of exams/assignments. **By continuing in the course after reading the syllabus, you are indicating that you accept the terms of the syllabus.** October 24th, 2008 is the last day to drop with a W.

Introduction to Neuroscience

Fall 2008 Scheduleϕ

	Date	Topic	Readings	Instructor
1	8/25	Introduction	Kolb & Whishaw, Ch. 1, pgs. 2-4	Trask & Schmolesky
2	8/27	Gross Neuroanatomy	Kolb & Whishaw, Ch. 1, pgs. 5-7, Ch. 2, pgs. 36-46	Trask
3	8/29	Behavior	Kolb & Whishaw, Ch. 1, pgs. 7-13, 28-30	Schmolesky
	9/1	**No Class--Labor Day**		
4	9/3	Organization of the nervous system	Kolb & Whishaw, Ch. 2, pgs. 47-62	Trask
5	9/5	Nervous system function	Kolb & Whishaw, Ch. 2, pgs. 62-70	Schmolesky
6	9/8	Cells of the nervous system	Kolb & Whishaw, Ch. 3, pgs. 76-87	Schmolesky
7	9/10	General cell structure	Kolb & Whishaw, Ch. 3, pgs. 90-6; Lodish, Ch. 1, pgs. 1-4	Trask
8	9/12	Biological molecules	Kolb & Whishaw, Ch. 3, pgs. 87-90; Lodish, Ch 2, pgs. 40-49	Trask
	9/13-9/15	**EXAM I**	**Kolb & Whishaw, Ch. 1-3; Lodish, Ch. 1-2; Supplemental material**	
9	9/15	Nucleic acid structure	Lodish, Ch. 4, pgs. 111-20	Trask
10	9/17	Central dogma of molecular biology	Kolb & Whishaw, Ch. 3, pgs. 93-6; Lodish, Ch. 4, pgs. 120-126	Trask
11	9/19	Central dogma of molecular biology	Lodish, Ch. 4, pgs. 127-139	Trask
12	9/22	Regulation of Transcription	Lodish, Ch. 7, pgs. 269-90	Trask
13	9/24	DNA Replication	Lodish, Ch. 4, 139-45	Trask
14	9/26	Mutations	Kolb & Whishaw, Ch. 3, pgs. 102-6; Lodish, Ch. 4, pgs. 145-149	Trask
15	9/29	Genetics and inheritance	Kolb & Whishaw, Ch. 3, pgs. 98-102; Lodish, Ch. 5, pgs. 166-176	Trask
16	10/1	Protein structure and function	Kolb & Whishaw, Ch. 3, pgs. 95-6; Lodish, Ch. 3, pgs. 63-78, 86-9	Trask
17	10/3	Molecular techniques	Kolb & Whishaw, Ch. 3, pgs. 100, 106-7; Lodish, Ch. 5, pgs. 176-1	Trask
	10/4-10/6	**EXAM II**	**Kolb & Whishaw, Ch. 3; Lodish, Ch. 3-5 & 7; Suplemental material**	
18	10/6	Molecular techniques	Lodish, Ch. 5, pgs. 198-211	Trask
19	10/8	Biological membranes	Kolb & Whishaw, Ch. 3, pgs. 92, 96-8; Lodish, Ch.. 10, pgs. 411-2	Trask
20	10/10	Signal transduction	Lodish, Ch. 15, pgs. 623-7; pgs. 632-57	Trask
21	10/13	Movement across membranes	K & W, Ch. 3, pgs. 90-6; Lodish, Ch. 11, pgs. 437-41, 447-58, 465-72	Trask
22	10/15	Electrophysiology, membrane potentials	Kolb & Whishaw, Ch. 4, pgs. 110-124; Lodish, Ch. 11, pgs. 448-65	Trask

	10/17	**No Class--Fall Break**	

23	10/20	Action potential, summation	Kolb & Whishaw, Ch. 4, pgs. 125-138	Schmolesky
24	10/22	Synapses and transmitters	Kolb & Whishaw, Ch. 5, pgs. 148-164	Schmolesky
25	10/24	Synaptic plasticity	Kolb & Whishaw, Ch. 5, pgs. 172-184	Schmolesky
	10/25-10/27	**EXAM III**	**Kolb & Whishaw, Ch. 3-5; Lodish, Ch. 5, 10, 11, &15; Suppl. Material**	
26	10/27	The eye and phototransduction	Kolb & Whishaw, Ch. 8, pgs. 266-278	Schmolesky
27	10/29	Visual pathways	Kolb & Whishaw, Ch. 8, pgs. 279-288	Schmolesky
28	10/31	Visual function and dysfunction	Kolb & Whishaw, Ch. 8, pgs. 289-304	Schmolesky
29	11/3	Types of memories and conditioning	Kolb & Whishaw, Ch. 13, pgs. 482-496	Schmolesky
30	11/5	Neural circuits for memory	Kolb & Whishaw, Ch. 13, pgs. 496-504	Schmolesky
31	11/7	Brain plasticity	Kolb & Whishaw, Ch. 13, pgs. 504-518	Schmolesky
32	11/10	Cognition: Attention and planning	Kolb & Whishaw, Ch. 14, pgs. 520-536	Schmolesky
33	11/12	Cognition: Techniques and asymmetry	Kolb & Whishaw, Ch. 14, pgs. 536-550	Schmolesky
34	11/14	Cognition: Intelligence and consciousness	Kolb & Whishaw, Ch. 14, pgs. 558-567	Schmolesky
	11/15-11/17	**EXAM IV**	**Kolb & Whishaw, Ch. 8, 13, 14**	
35	11/17	Brain and behavioral disorders	Kolb & Whishaw, Ch. 15, pgs. 568-578	Schmolesky
36	11/19	Treatments for disorders	Kolb & Whishaw, Ch. 15, pgs. 578-584; Supplemental material	Trask
37	11/21	TBI, Stroke, Epilepsy, MS	Kolb & Whishaw, Ch. 15, pgs. 585-590: Supplemental material	Schmolesky
38	11/24	Parkinson's, Alzheimer's, Huntington's	Kolb & Whishaw, Ch. 15, pgs. 590-59; Supplemental material	Trask
39	11/26	Schizophrenia	Kolb & Whishaw, Ch. 15, pgs. 598-600: Supplemental material	Schmolesky
	11/28	**No Class--Thanksgiving Holiday**		
40	12/1	Mood and anxiety disorders	Kolb & Whishaw, Ch. 11, pgs. 419-427; Ch. 15, pgs. 600-605	Schmolesky
41	12/3	Cutting edge techniques and new discoveries	Supplemental materials	Trask & Schmolesky
42	12/5	Recap and closing remarks	Kolb &Whishaw, Epilogue, pgs. 608-621	Schmolesky & Trask
	12/10	**Final Exam (EXAM V)**	**Kolb & Whishaw, Ch. 11, 15, Epilogue; Supplemental material**	
	ϕThis Topic Schedule Subject to Change However Exam Dates are Firm			