Instructor: Dr. Dayan Knox, office – T,R 11:15 am – 12:15 pm
Teaching Assistant: William Schreiber
Class time: T,R - 9:30 – 10:45 am
Class space: 205 Kirkbride Hall

Goals:
This class is intended for BA majors interested in acquiring general scientific knowledge about what neuroscience has taught us about brain/behavior function. Students will learn fundamental information about the cellular biology and electrophysiological properties of neurons, neuroanatomy, and how the activity of neurons can yield simple motor action and complex behavioral/psychological functions such as learning and motivation.

Meeting Times:
Class meets every Tuesday and Thursday from 9:30 – 10:45 am from February 4th to May 15th. This means we have a total of 28 meeting times for this class. Each class will be divided into three sections; a) Quiz for 10 minutes, b) lecture and class presentation for 30 - 45 minutes, c) 10 - 15 minutes for class presentation, 5-10 minutes review of material covered in class. On scheduled days we will also have, ‘break-out’ sessions. For these sessions, instead of lecture, students will form a group of 8 – 10, discuss topics that are unclear, and myself and William will address these questions in 5 – 10 minutes sessions. Break-out sessions are listed in the syllabus.

Course Grade
Summary: A total of 100 points can be obtained in this class. In addition 5 additional extra credit points can be earned. Points can be earned as follows

A) Class Discussion (5 points): This is a measure of the student’s activity in the classroom. Certain posts made on the blog on Sakai may also count as class discussion. Points will be assigned to students based on questions raised and answered, answers refuted, and points clarified. Points will be assigned at the end of class in an all or none fashion. For each awardable comment a student makes, 0.25 points will be awarded for a maximum of 0.5 points per class. This is separate from Class presentations.

B) Quiz (20 points): These will be five multiple choice questions given at the start of every class and will be based on the material covered in the previous class. The only exception to this is the first class. Each quiz is worth 5 points with each question being worth 1 point. The total points awarded for all quizzes will be scaled to yield 20 points. For example, if the total points for quizzes come up to 100, and a student gets 100, this scored will be divided into 5 to yield a total
score of 20. These quizzes will be done using iclicker so please purchase your iclicker and be prepared to use them. The frequency for this class is AB.

C) Examinations (45 points): There will be three examinations: Exam I, II, and a final exam. Exams will be a combination of multiple choice, fill in the blanks, and short answer questions based on material presented in class and covered in the book. Exams I and II will be worth 10 points each and the final exam will be worth 25 points. Each exam will only test information about topics covered in the class thus far without overlap. Thus, Exam II will not contain any material covered in Exam I. However, the final exam will be inclusive of all material covered in the class.

D) Class Presentations (15 points): Students will form groups of two and work on group presentations in class, for class. These presentations will require students to lead a 5 minute discussion on a number of topics relating to brain and behavior. Students not presenting can ask questions about the presentation. Selection of the presenting group will be determined on the day of class itself. While there will be allotted class time for preparation of presentations, it is up to the group if they want to prepare for class presentations outside of class. Topics for presentations are contained in the Syllabus. At first a request for volunteer presentations will be made. If there are no volunteers, a group will be selected to perform the presentation. Remember, in order to obtain five points the selected group MUST do the class presentation.

Extra Credit Opportunities (5 points): This will be given to particularly insightful comments during class or on the Sakai discussion board. Allocation of extra credit points will be determined by the Professor, but a student can only get a maximum of 5 points.

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

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
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<td>D-</td>
<td>60 - 62</td>
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<td>E+</td>
<td>57 - 59</td>
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Textbook

Course Outline
02/05/13, Class 1
- Quiz 1
- Material read - Chapter 2
- Lecture 1 – Introduction and historical perspectives of Behavioral Neuroscience
- Presentation A – What is the difference between Psychology and Neuroscience?

Modules 1: Structure and function of cells in the brain
02/07/13, Class 2
- Quiz 2
- Material read - Chapter 2
- Lecture 2 – Cell types in the brain: Anatomy of neurons and glia
- Presentation B – Why do you think it was so difficult for early philosophers to agree that brain mediates psychological function?

02/12/13, Class 3
- Quiz 3
- Material read - Chapter 2
- Lecture 3 – Generation of the action potential I
- Presentation C – Neurons have a very distinctive shape. Give a reason why you think neurons have the kind of structure they have

02/14/13, Class 4
- Quiz 4
- Material read - Chapter 2
- Lecture 4: Generation of the action potential II and functions of glia
- Presentation D – Are there any advantages to having current conducted by ions, instead of electrons, in neurons?

02/19/13, Class 5
- Quiz 5
● Material read – Chapter 4
● Lecture 5 – Break out session 1: Form into groups of 8 – 10, discuss difficult concepts in Module 1, and I’ll come around and try to explain them again.
● Presentation E – Do you think there would be advantages if neurons had insulation around their cell bodies?

Module 2: Psychopharmacology
02/21/13, Class 6
● Quiz 6
● Material read - Chapter 4
● Lecture 6 – Neurotransmitters – Action, synthesis, reuptake
● Presentation D – Increased clock speed of a processer in a computer usually means increased processing power. Do you think increased capacity of a neuron to generate action potentials would mean an increase in the capacity of information processing in the brain?

02/26/13, Class 7
● Quiz 7
● Material read - Chapter 4
● Lecture 6 – Neurotransmitter Receptors – Synthesis, transport, and mechanisms; Actions of Drugs
● Presentation D – Why do you think there are so many different types of neurotransmitters?

02/28/13, Class 8
● Quiz 8
● Material read – Chapter 4
● Lecture 8 – Signal transduction pathways in neurons
● Presentation E - Do receptors stay in the membrane indefinitely? If not, what do you think happens to these receptors?

03/05/13, Class 9
● Quiz 9
● Material read – Chapter 4
● Lecture 9 - Break out session 2: Form into groups of 8 – 10, discuss difficult concepts in Module 2, and I’ll come around and try to explain them again.
● Presentation F – Which type of receptor is more important for neural communication: ligand-gated receptors or secondary messenger systems?
03/07/13, Class 10
- Exam 1

Module 3: Neuroanatomy

03/12/13, Class 11
- Review of Exam 1
- Material read – Chapter 3
- Lecture 10 – Structure of the nervous system 1
- Presentation G – If neurons in the brain were not as interconnected as they were, do you think the human brain would have the same processing power as we currently have? Give a reason for your answer.

03/14/13, Class 12
- Quiz 10
- Material read - Chapter 3
- Lecture 9 – Structure of the nervous system 2
- Presentation H – Why do you think clusters of neurons in the central nervous system and in the peripheral nervous system look so different?

03/19/13, Class 13
- Quiz 11
- Material read - Chapter 3
- Lecture 9 – Structure of the nervous system 3
- Presentation I – TBD

03/19/13, Class 14
- Quiz 12
- Material read – Chapter 3
- Lecture 11 – Break out session 3: Form into groups of 8 – 10, discuss difficult concepts in Module 3, and I’ll come around and try to explain them again.
- Presentation J - TBD

Module 4: Sensory perception

03/21/13, Class 15
- Quiz 13
- Material read – Chapter 6
- Lecture 12 – Vision I
● Presentation K - TBD

03/25/13 – 03/29/13
Spring Break

04/02/13, Class 16
● Quiz 14
● Material read - Chapter 6
● Lecture 13 – Vision II
● Presentation L - TBD

04/04/13, Class 17
● Quiz 15
● Material read - Chapter 7
● Lecture 14 – Audition
● Presentation M- TBD.

04/09/13, Class 18
● Quiz 16
● Material read - Chapter 8
● Lecture 15 – Break-out session 4: Form into groups of 8 – 10, discuss difficult concepts in Module 4, and I’ll come around and try to explain them again.
● Presentation N - TBD

04/11/13, Class 19
● Exam II

Module 5: Psychological function mediated by neurobiological activity
04/16/13, Class 20
● Review of exam II
● Material read – Chapter 8
● Lecture 16 – Sleep and Biological Rhythms
● Presentation P - TBD

04/16/13, Class 21
● Quiz 18
● Material read - Chapter 10
● Lecture 17 – Emotions I
● Presentation P - TBD

04/18/13, Class 22
● Quiz 18
● Material read – Chapter 10
● Lecture 18 – Emotions II
● Presentation Q - TBD

04/23/13, Class 23
● Quiz 19
● Material read - Chapter 12
● Lecture 19 – Learning and Memory I
● Presentation R - TBD

04/25/13, Class 24
● Quiz 20
● Material read – Chapter 12
● Lecture 20 – Learning and Memory II
● Presentation S- TBD

04/30/13, Class 25
● Quiz 21
● Material read - Chapter 14
● Lecture 21 – Neurological disorders
● Presentation T - TBD

05/02/13, Class 26
● Quiz 22
● Material read – Chapter 15
● Lecture 22 – Emotional Disorders
● Presentation U - TBD.

05/07/13, Class 27
● Quiz 23
● Material read – Chapter 16
● Lecture 23 – Cognitive Disorders
● Presentation V - TBD
05/09/13, Class 28
- Quiz 24
- Material read – Chapter 16
- Lecture 23 – TBD
- Presentation W - TBD

05/14/13, Class 29
- Quiz 25
- Lecture 24 – Break out session 5: Form into groups of 8 – 10, discuss difficult concepts from Modules 1 - 5, and I’ll come around and try to explain them again.

Final exam date:
- Place and time TBD

Attendance:
Attendance is not required for this class but is STRONGLY encouraged. 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, you can get the outline from the PowerPoint on Sakai, and/or obtain notes from a classmate.

Office hours:
Office hours are opportunities for students to clarify concepts that are unclear or address questions concerning the assignments, and are not meant to find out what material was presented in a class that the student may have missed.

Grade Appeals:
If, after receiving an exam, quiz, or critique 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 into me at the end of the class period or via email. You will receive a response, and any grade adjustment necessary, within one week. THIS IS THE ONLY WAY that your concerns will be addressed. ONLY written questions and comments THAT YOU SUPPORT will be evaluated.

Academic Dishonesty/Plagiarism/Cheating:
We encourage students to work and study together whenever possible. If you cheat on ANY assignment (even extra credit), you will receive a grade of F (Failing) for the course. Plagiarism
is when you represent someone else’s ideas or words as your own and is considered as cheating. Please avoid academic dishonesty at all costs

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

**Students’ Rights and Responsibilities:**
Please refer to the following web site for a complete listing of all student rights and responsibilities

**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.