**Instructor:** Dr. Dayan Knox  
**Class time:** T,R – 11:00 am – 12:15 pm  
**Section:** 008 (honors)  
**Class space:** 308 Gore Hall  
**Office hours:** Office hours for this are Wednesday from 11:00 am – 1:00 pm on Wednesday in 109 McKinly Lab but if you need to meet at another time, email me and let me know. Usually I can facilitate this.

**Goals:**  
This class is intended for NS and BS majors in the honors program. The goal of this class is to introduce Neuroscience to the student. Students will learn fundamental information about the cellular biology and electrophysiological properties of neurons, neuroanatomy, psychopharmacology, and how the activity of neurons can yield sensory perception, motor control, and complex behavioral/psychological functions such as learning and motivation.

**Meeting Times:**  
Class meets every Tuesday and Thursday from 11:00 am – 12:15 pm from August 30th to December 8th. Each class will be divided into three sections; a) Quiz for 10 minutes, b) lecture for 30-45 minutes, and a 5 minute review of material covered in class if time permits or if such a review is needed. On scheduled days we will also have, review sessions. For these sessions, instead of lecture, we will have a mock exam where the upcoming exam will be reviewed. Also some lectures will be in the form of a talk. You will not be examined or quizzed on contents from talks. In addition, during these sessions questions about specific topics from previous classes can be raised. Finally, there will be group presentations. Students will form in groups, defined early on in class, and present about the relevance of a topic in Neuroscience to everyday life. There will also be group and individual writing assignments.

**Groups**  
Students will self-assign into the following groups within the first two weeks of class. If a particular student is not a part of a group, then I will assign students to groups. Here are the following groups.  
LTP  
Amygdala  
Hippocampus  
Optogenetics  
CREB  
Long-term memory  
Consolidation
Emotion

Email me and let me know which group you want to join otherwise you will be assigned to a group.

**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 concepts 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. There is no limit to the amount of points a student can earn in a class.

B) **Quiz (20 points):** These will be five - ten multiple choice, or fill-in-the blank, questions given at the start of every class. These questions will only be based on the material covered in the previous class. The only exception to this is the first class. Each quiz is worth 5 – 10 points with each question being worth 1 point. The total points awarded for all quizzes will be scaled to yield 20 points to your overall grade. For example, if the total points for quizzes come up to 100, and a student gets 100, this score will be scaled 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 prior to coming to class. The frequency for this class is AB.

C) **Examinations (50 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 15 points each and the final exam will be worth 20 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) **Individual writing assignment (10 points):** Each student must write an abstract of a neuroscience experiment they would like to conduct. The abstract can only be a page long with single spacing, 1” margins, and 12 New Times Roman font. Of course, this is too short to write an exhaustive experiment, so you must summarize why the experiment is important and should be conducted, what methods you would use, anticipated results, and how these anticipated
results will significantly contribute to the field of neuroscience. Students can submit their writing assignments three times and the highest grade from the three submissions will be used as the writing assignment grade. However, in order to submit the writing assignment three times, students must submit their initial assignment either on the due date or before the due date. Examples of abstracts are on the Sakai site.

E) Group writing assignment (15 points): Each group must write the outline of a neuroscience experiment. The individual writing assignment should not be the same as the group assignment for any student, but exceptions can be made. Examples of experimental outlines are on the Sakai site. Each experiment outline must have a rationale for an introduction, description of methods and number of animals that will be used, statistics, expected results, and an outline of how the expected results will significantly contribute to the field of neuroscience. There will be two components to the grade. First each student must demonstrate which part of the outline they worked on. Each student will be graded individually on this. The overall quality of the outline will then be graded separately. This group grade will be applied to all students. At the end of the semester, students must present their experiment outlines as a group. The quality of the presentation will count towards your group grade for this assignment.

Extra Credit Opportunities (5 points): This will be given to particularly insightful comments during class or on the Sakai discussion board. Particularly good writing assignments will also be eligible for extra credit. Allocation of these extra credit points will be determined by the Professor. Also, the top 10 scorers in every exam will be allocated an extra credit point. Keep in mind 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>
<td>A+</td>
<td>97 - 100</td>
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<td>A</td>
<td>93 - 96</td>
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<td>A-</td>
<td>90 - 92</td>
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<tr>
<td>B+</td>
<td>87 - 89</td>
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<td>B</td>
<td>83 - 86</td>
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<td>B-</td>
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<td>C+</td>
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<td>C</td>
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<td>C-</td>
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<td>D+</td>
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<td>D-</td>
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<td>F</td>
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Textbook
MyPsychLab

Course Outline
08/30/16, Class 1
- Quiz 1
- Material read - Chapter 1
- Lecture 1 – Introduction to class and historical perspectives of Behavioral Neuroscience

Modules 1: Structure and function of cells in the brain
09/01/16, Class 2
- Quiz 2
- Material read - Chapter 2 & 4
- Lecture 2 – Cell types in the brain and generation of the action potential I

09/06/16, Class 3
- Quiz 3
- Material read - Chapter 2 & 4
- Lecture 3 – Generation of the action potential II and modelling of the neuronal membrane potential

Module 2: Psychopharmacology
09/08/16, Class 4
- Quiz 4
- Material read – Chapter 4
- Lecture 4 – Psychopharmacology I: Action, synthesis, reuptake

09/13/16, Class 5
- Quiz 5
- Material read – Chapter 4
- Lecture 5 – Psychopharmacology I: Action, synthesis, reuptake

09/15/16, Class 6
- Quiz 6
- Material read – Chapter 4
- Lecture 6 – Psychopharmacology II: Signal Transduction and Hormones
09/20/16, Class 7
- Material read – Chapter 4
- Lecture 7 – Psychopharmacology III: Actions of drugs and gap junctions

09/22/16,
- Statistics and methods in neuroscience (talk)
- Review of Exam structure and review session

09/27/16, Class 8
- Exam 1

Module 3: Neuroanatomy
09/29/16, Class 9
- Review of Exam 1
- Material read – Chapter 3
- Lecture 8 – Structure of the Nervous system I

10/04/16, Class 10
- Quiz 7
- Material read – Chapter 3
- Lecture 9 – Structure of the nervous system II and measuring global measures of neural activity

Module 4: Sensory perception and motor control
10/06/16, Class 11
- Quiz 8
- Material read - Chapter 6
- Lecture 10 – Vision I

10/11/16, Class 12
- Quiz 9
- Material read - Chapter 6
- Lecture 11 – Vision II

10/13/16, Class 13
- Quiz 10
- Material read - Chapter 7
● Lecture 12 – Auditory systems

10/18/16, Class 14
● Quiz 11
● Material read - Chapter 7
● Lecture 13 – Motor control

10/20/16, Class 15
● Quiz 12
● Lecture 14 – Mock exam II and review of material for Exam II

10/25/16, Class 16
● Exam II

10/27/16, Class 17
● Review of Exam II
● Role of Evolution in Neuroscience (talk)

Module 5: Psychological function mediated by neurobiological activity
11/01/16, Class 18
● Material read – Chapter 8
● Lecture 15 – Sleep and Biological Rhythms

11/03/16, Class 19
● Quiz 13
● Material read – Chapter 12
● Lecture 16 – Learning and Memory I

11/08/16
● Classes suspended due to elections

11/10/16, Class 20
● Quiz 14
● Material read - Chapter 12
● Lecture 17 – Learning and Memory II

11/15/16, Class 21
● Quiz 14
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INTRODUCTION TO NEUROSCIENCE SYLLABUS

- Material read - Chapter 14
- Lecture 17 – Neurological disorders

11/17/16, Class 22
- Quiz 15
- Material read - Chapter 14 & 15
- Lecture 18 – Cognitive disorders

Thanksgiving Break
- 11/21/16 – 11/25/16

11/29/16, Class 23
- Quiz 16
- Material read - Chapter 15
- Lecture 19 – Emotional disorders

12/01/16, Class 24
- Class presentations by the following groups
  - LTP –
  - Amygdala –
  - Hippocampus -
  - Consolidation

12/06/16, Class 25
- Group presentations by the following groups
  - CREB –
  - Long-term memory –
  - Optogenetics –
  - Emotion -

12/08/16, Class 26
- Mock exam followed by discussion and review of the material. Please keep in mind that the final exam is comprehensive

Final exam – 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.

Misconduct in class or on written components of the class
Obscenity is not tolerated in class. Every swear word you say in class will result in the loss of 10 points. The same applies for exams. You will lose 10 points for every obscenity written on an exam. It is up to the instructor’s discretion to judge if a swear word was incidental, by accident, or intentional. Swear words that are uttered by accident and/or incidental (in the opinion of the instructor) will not be penalized. If you are being disruptive in class I will ask you to leave. If you do not leave I will have to call campus safety/police to remove you. Please, let’s not let things escalate to this level.

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.