

**BIOLOGY 352 Fall 2017**  
**NEUROBIOLOGY AND BEHAVIOR**  
**Tuesday, Thursday 12:15 – 1:30 pm SSMB 138**

**Instructor:** Dr. Jeffrey D. Triplehorn

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**Office location:** Off-campus (SCRA facility); office hours held in SSM 148

**Phone:** 953-5848

**Office hours:** Wednesday 10:30-11:30 am or by appointment

**1. Course prerequisites and Co-requisite(s) or Prerequisite(s)**

*Prerequisite:* BIOL/PSYC 351 or PSYC 214

*Co-requisite(s) or Pre-requisite(s):* MATH 250 or equivalent course in statistics

*Cross-listing:* PSYC 352

**2. Course description**

The second course of a two-semester series that serves as a rigorous introduction to the field of neuroscience. This course focuses on sensory and motor systems, neural regulatory systems, functional neuroanatomy and behavioral/cognitive neuroscience.

**3. Instructional objectives and student learning outcomes**

- a. Identify and explain principles underlying sensory system functioning
- b. Identify and explain principles underlying motor system functioning
- c. Describe how neurons interact to form circuits that underlie behavior
- d. Develop oral skills in class discussions of experimental design and issues related to neuroscience and neuroscience research

**4. Required reading and materials**

Neuroscience, 5<sup>th</sup> ed., Purves, Augustine, Fitzpatrick, Hall, Lamantia, and White. Sinauer Associates, Inc. Sunderland, Massachusetts 2012.

Any additional required readings will be posted on OAKS. There may also be videos that are required for viewing outside of class. These will expand upon the material presented in class.

**5. Course and attendance policies**

The class will meet for 75 minutes, twice per week. **Class attendance is mandatory.** Students that do not attend regularly will not do well on exams. Class time will be used to present lectures, give demonstrations, show video clips, and discuss material. Discussion in class will be designed to stimulate thought about the material we are covering. Additionally, it will be extremely difficult to keep up with the amount of information presented in this course if you do not attend class. **You are responsible for all material that is covered in the lectures and in the text.** Material and topics will be discussed in class that is not in the textbook.

During lectures, I will be making use of PowerPoint slides, the white board, and videos.

Preliminary slides will be provided prior to lecture and final slides (including links to internet videos shown in class) will be posted on OAKS after lecture. *Lecture notes will not be posted.*

**6. Technology Policy**

There will be no use of cell phones, computers, iPads, iPhones, etc. during class. These devices are disruptive to other students in the classroom and to my teaching. If your cell phone goes off during class, you may be asked to leave for the day. All devices are to be turned off and put away (not left on your desk) until class is dismissed.

## 7. Evaluation

Grades will be based on **take-home assignments, one quiz (cranial nerves), class discussion, three exams and a comprehensive final.** Exams will consist of multiple question formats that may include: multiple choice, fill-ins, matching, figure completions, short answers, and short essay questions. Material will be drawn from lectures, class discussions, and the readings. Short, five-minute quizzes will be given occasionally. The highest quiz grade for each section of the course will be added to the score of the next exam. For example, if you received a 3 on Quiz 1 and a 4 on Quiz 2, then you will have 4 points added to your next exam grade.

> Quizzes will be given at the beginning of class and will be timed. **If you miss a quiz, you will not be able to make it up under any circumstance (emergency or otherwise).** If you come in late, you will not get extra time to finish the quiz. The dates for the quizzes and material covered on each quiz are indicated on the class schedule.

> The exams will be given on the dates indicated in the class schedule. Each student is responsible for knowing when the exams will be given as well as taking the exams on those dates.

> **Each student is responsible for bringing one or two Number 2 pencils to each of the exams.**

> If you are an athlete and know that you will be unable to attend an exam, please notify me **at least one week in advance**; I will make arrangements for you to take the exam.

> If you are a student with special needs (i.e. a documented learning disability) and you require special arrangements for the exam, please see me as soon as possible so that I have additional time to accommodate your needs. **You must provide documentation of your special need in writing at the beginning of the semester.**

## 8. Exam policies

There will be no make-up exams.

Students must be present for all exams. You may petition to have an excused absence for an exam if:

1. A death in the immediate family.
2. An illness or emergency that results in a visit to a hospital emergency room or to a physician.

I expect to be notified by phone or e-mail immediately if it will affect your presence at an exam. This **must** be followed up by documentation in writing (i.e. you must provide an obituary or provide a letter from an Emergency Room physician).

**In the event that I excuse your absence, your missing grade will be replaced by the average of your other exams.**

**If your absence is unexcused, you will receive a "0" for the exam.**

## 9. Grading policy

Grades will be assigned on the basis of the number of points that you earn at the completion of the course. The number of points and the approximate percentage of the grade are indicated below.

| Source                        | % of Grade | Number of Points |
|-------------------------------|------------|------------------|
| Exam #1                       | 20%        | 200              |
| Exam #2                       | 20%        | 200              |
| Exam #3                       | 20%        | 200              |
| Final Exam<br>(comprehensive) | 25%        | 250              |
| Cranial Nerve Quiz            | 3%         | 30               |
| Take-home Assignments (2)     | 6%         | 60               |
| Class participation           | 6%         | 60               |
|                               |            | <b>1000</b>      |

## 10. Grade assignment

The combined total for all of the above will be 1000 points. Your final grade in the course will be based on a percentage of points based on the College of Charleston grading scheme:

| % of Total Points | Point Range | Grade Earned |
|-------------------|-------------|--------------|
| 93% and higher    | 930-1000    | A            |
| 90-92.9%          | 900-929     | A-           |
| 87-89.9%          | 870-899     | B+           |
| 83-86.9%          | 830-869     | B            |
| 80-82.9%          | 800-829     | B-           |
| 77-79.9%          | 770-799     | C+           |
| 73-76.9%          | 730-769     | C            |
| 70-72.9%          | 700-729     | C-           |
| 67-69.9%          | 670-699     | D+           |
| 63-66.9%          | 630-669     | D            |
| 60-62.9%          | 600-629     | D-           |
| <60%              | <600        | F            |

## 11. Late policy

You are expected to turn in the take-home assignments on time. Failure to do so is equivalent to failing to meet a deadline. If you fail to meet the assignment deadline, the highest grade you can earn is the lowest of the assignments turned in on time, minus one point. For example, if the lowest grade in the class was a 20 points on the assignment (out of 30 possible points), you would get 19 points if the assignment was perfect. I will not accept an assignment after I have returned the graded assignments to the class. If you have a personal or family emergency, the same policy listed above for the exam (with respect to the documentation) applies. **Electronic copies of take-home assignments will not be accepted!**

## 12. Expectations of the students

Remember that you have a responsibility for you own education. I am here to facilitate you in this process. You accept this responsibility by being prepared, being attentive and participating in class, and reviewing materials prior to class. This course will cover a lot of material. I encourage you to attend the weekly review sessions. If you are having difficulties with the material, seek help early. I can only help you if you come see me so that we can work together.

### **13. College of Charleston Honor Code and Academic Integrity**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>

### **14. Accommodations for students with disabilities**

The College of Charleston abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged. Students should apply for services at the Center for Disability Services/SNAP (843-953-1431) located on the first floor of the Lightsey Center, Suite 104.

### **15. Center for Student Learning**

I encourage you to utilize the Center for Student Learning's (CSL) academic support services for assistance in study strategies, speaking & writing skills, and course content. They offer tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at <http://csl.cofc.edu> or call (843)953-5635.

## 16. Schedule

The following schedule represents a tentative plan for the course. **Topics and dates are subject to change.**

**Quizzes occur at the beginning of class.**

| Lecture | Date         | Readings       | Quiz/Exam                 | Topic   |
|---------|--------------|----------------|---------------------------|---|
| 1       | August 22    | Ch. 1-7        |                           | Course introduction/Neurobiology concept review                                 |
| 2       | August 24    | Ch. 1-7        |                           | Neurobiology concept review/New general concepts                                |
| 3       | August 29    |                | <b>Assignment #1</b>      | Group discussion on designing a neuroethological experiment                     |
| 4       | August 31    | Ch. 11         |                           | General sensory principles/Vision: The eye                                      |
| 5       | September 5  |                | <b>Cranial nerve quiz</b> | Vision: The eye and visual processing   |
| 6       | September 7  | Ch. 12         |                           | Central visual pathways   |
| 7       | September 12 | Ch. 13         | <b>Quiz</b>               | Auditory system   |
| 8       | September 14 |                |                           | Barn owl sound localization   |
| 9       | September 19 |                | <b>Quiz</b>               | Barn owl sound localization   |
| 10      | September 21 | Ch. 14         |                           | Vestibular system   |
|         | September 26 |                | <b>Exam I</b>             | <b>Lectures 1-9</b>   |
| 11      | September 28 | Ch. 15         |                           | Chemical senses   |
| 12      | October 3    | Ch. 9          | <b>Quiz</b>               | Somatic sensory system: Touch   |
| 13      | October 5    | Ch. 9, 362-368 |                           | Somatic sensory system: Proprioception  |
| 14      | October 10   | Ch. 10         | <b>Quiz</b>               | Pain reception  |
| 15      | October 12   |                | <b>Assignment #2</b>      | Class discussion on issues involving pain                                       |
|         | October 17   |                |                           | <b>FALL BREAK</b>   |
|         | October 19   |                | <b>Exam II</b>            | <b>Lectures 10-15</b>   |
| 16      | October 24   |                |                           | Bat echolocation  |
| 17      | October 26   |                |                           | Bat echolocation and insect hearing   |
| 18      | October 31   | Ch 16          | <b>Quiz</b>               | Spinal cord and lower motor neurons   |
| 19      | November 2   | Ch. 17         |                           | Upper motor neurons   |
| 20      | November 7   | Ch. 18         |                           | Basal ganglia   |
| 21      | November 9   |                | <b>Quiz</b>               | Basal ganglia   |
| 22      | November 14  | Ch. 19         |                           | Cerebellum  |
|         | November 16  |                | <b>Exam III</b>           | <b>Lectures 16-Basal ganglia</b>  |
| 23      | November 21  |                |                           | Cerebellum  |
|         | November 23  |                |                           | <b>THANKSGIVING</b>   |
| 24      | November 28  |                |                           | CPG's and locust flight   |
| 25      | November 30  |                | <b>Quiz</b>               | Locust flight   |
|         | December 12  |                | <b>FINAL</b>              | <b>FINAL EXAM 12-3pm</b><br>Cerebellum, CPG's, locust flight, and comprehensive |