**Neuroscience 3003**

**Neuroscience of Behavior**

**Spring 2019**

Instructor: Audrey Duarte, 124 Coon, 404 894-2349, audrey.duarte@psych.gatech.edu. Office hours are Mondays 10-11. I will also try to answer brief questions by email.

Teaching Assistant: Alexandra Trani, alexandra.trani@gatech.edu.

General Information: The overarching goal of this course is to examine the biological basis of psychology. Behavioral Neuroscience is an interdisciplinary science that aims to investigate the interaction between brain and behavior. We will study the structure and function of the nervous system, from the cellular level up to the level of higher order cognition. Hopefully, upon completing this course, you will have a fundamental understanding of neuronal communication, neuroanatomy, cognitive phenomena such as memory, emotion and language and how such phenomena are affected by changes to the underlying neural structure and function.

Lectures: Lectures will be in 250 Coon on MWF: 9:05 to 9:55 AM. It is important that you attend class. **Much of the material we cover in class is not in the text and it will be difficult for you to do well in this course if you miss class regularly.** Also, please be on time. I know, it’s early for me too but I think we can all make the effort.

Credit: 3-0-3

Prerequisites: NEUR 2001

Texts and Materials:

1. I recommended that you purchase the textbook. While I will not lecture directly from the text, and will not test you on topics presented in the textbook that are not covered in lecture, you may want supplement the lecture material with the assigned readings.

Carlson, N. R. (2010). ***Physiology of Behavior***, 10th ed, Needham Heights, MA: Allyn and Bacon. [C]

1. You will need a Turning Technologies Response Card Clicker for this course. These can be purchased at the student bookstore in Tech Square.

Grades:

*Exams:* There will be 4 exams – three non-cumulative mid-term exams and a cumulative final exam held during finals week. Each of the mid-term exams will consist of multiple choice, fill in the blank, short answer and long essay questions. You will be given a list of possible essay questions one week in advance and a select portion of these will be on the in-class exam. Each midterm is worth 100 points. The final exam will be worth 100 points.

*Homework:* There is one homework assignments worth 15 points due by **Friday February 26th** on T Square. Issues and scientific studies relevant to biological psychology appear often in the news, including newspapers, television, magazines, websites, etc. Your assignment is to find one such news reports appearing within the last year about the topic of biological psychology and summarize them in YOUR OWN WORDS. Your summary should be no more than a page and should convey the essence of the news story and why you found it interesting. Include the reference where the story can be found, and if appropriate, the reference to the journal in which the study was published.

*Attendance:* I do not take attendance every day.However,periodically in lecture, I’ll administer short quizzes. Nothing too difficult but if you regularly attend class and take good notes, you should do well. There are 30 points worth of quizzes across the semester. Bring your clickers every day!

*Extra credit:* You may participate in School of Psychology experiments of your choice for extra credit.You will receive 5 points of extra credit for each hour of participation up to a maximum of 15 points. To sign up for a study, go to <http://gatech-psych.sona-systems.com/>. This participation must be completed by Wednesday April 27th.

IMPORTANT NOTICE ABOUT SONA NO SHOWS: When students sign up for studies, it is important that they show up at the appointed time or cancel their appointments 24 hours in advance.  Missed appointments are problematic because of the time and opportunities lost such as depriving other students from taking that spot and the lost time of the researchers. If there are two unexcused missed appointments during the semester, the student will no longer be able to sign up for studies.  In this case, the remaining requirement must be fulfilled using the alternative assignment.  Arriving late to an appointment may constitute a missed appointment if the researcher is not able to accommodate the student in the remaining time.

Alternatively, you may conduct additional homework assignments, as described above, for 3 points each, up to a maximum of 15 points.

*Missed exams and late assignments*: If you need to miss an exam for any **legitimate** reason please let me know **at least** a day in advance. In the unlikely event of an emergency occurring on the morning of the exam, please submit a physician’s note or equivalent as soon as possible. We may schedule make-up exams for legitimate absences only. In all other circumstances a missed exam will result in a grade of zero for that exam.

*Absences:* Although it is recognized that occasionally it may be necessary for students to be absent from scheduled classes or laboratories for personal reasons, students are responsible for all material covered in their absences, and they are responsible for the academic consequences of their absences. (<http://catalog.gatech.edu/rules/4/>) Excusable absences include emergency medical treatment, family emergencies (such as death in the family), approved institute activities (such as student athlete travel) and job interviews. Manufacturing a false excuse is a violation of the Honor Code. In the event of any such excusable absence, please provide documentation to the instructor upon returning to class. If no documentation is provided the absence will be considered unexcused.

*Assignment of Grades:* Final grades will be assigned based on your overall percentage of 445 points. Possible points: exams (400 points), attendance (30 points), homework (15 points).

Letter grades will be assigned as follows:

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| Range | Letter Grade |
| 90 – 100% (400-445 points) | A |
| 80 – 89% (356-399 points) | B |
| 70 – 79% (355-311 points)  | C |
| 60 – 69% (310-267 points) | D |
| <60% (<267 points) | F |

Cellphones: Please turn off all cellphones and similar devices before coming to class. You may bring a laptop to class for taking notes only. You will be asked to leave if you use it for any other purpose.

Students with Disabilities: Any student with a documented disability needing academic adjustments or accommodations is requested to speak to me in the first week of class. All discussions will remain confidential, although Office of Disability Services may be consulted to verify the documentation of the disability. (<https://disabilityservices.gatech.edu/>)

Academic Honor: I expect all members of the class to abide by the Honor Code. This means that all students are expected to submit their own, original work, including preparation of essay questions and the Pinel exercises. Don’t cheat. GT has a very strict policy on cheating and plagiarism. I’d rather not have to submit anyone to the Office of Student Integrity. Looking on another student’s exam in class, using existing copies of exams either in or outside of class, using ideas or words written by another person whether they are a current or former member of this class are all considered plagiarism.

All instances of plagiarism or other violations academic honor will be dealt with according to the procedures described in the GT Academic Honor Code. If you have any questions regarding the Honor Code, please feel free to contact me or the teaching assistant, or visit www.honor.gatech.edu.

### Tentative Schedule

## Part I: Basic Principles of Biological Psychology

**Week 1 (January 11-15): Overview, anatomy and development of the**

**nervous system**

Reading: Carlson chapter 1, pages 2-14, 23-25; Chapter 3, pages 69-82

**Week 2 (January 18-22): Anatomy and development of the nervous system, neural communication**

 **No Class Monday January 18th – Official school holiday**

Reading: Carlson chapters 3, pages 83-100; Chapter 2, pages 29-52

**Week 3 (January 25-29): Neural communication and psychopharmacology**

Reading: Carlson chapters 2, pages 53-66; Carlson chapters 4, pp 110-132

Exam essay questions distributed Friday January 29th

**Week 4 (February 1- February 5th): Drugs of abuse**

 Reading: Carlson chapters 4, pp 103-109; Chapter 18

**Mid-Term Exam 1: In-class exam Friday, February 5th.**

## Part II: Neural Systems

# Week 5 (February 8-12): Neuroscience methods

Reading: Carlson chapter 5, pp 135-140, 146-156.

# Week 6 (February 15-19): The Visual System

# Reading: Carlson chapter 6

# Week 7 (February 22-26): Other Sensory Systems

 Reading: Carlson chapter 7, pp 213-249.

**Homework due on Friday February 26th on T Square**

**Week 8 (February 29 - March 4th): The Sensory and Motor Systems Continued**

Reading: Carlson chapter 8

Exam essay questions distributed Monday February 29th

**Week 9 (March 7-11): Mechanisms of Learning and Memory**

Reading: Carlson chapter 13, pp 444-453

**Mid-Term Exam 2: In-class exam Monday, March 7th.**

## Part III: Memory and Emotion

**Week 10 (March 14-18):** **Memory Mechanisms and Memory Disorders**

Reading: Carlson chapter 13, pp 440-443, 454-484.

**Week 11 (March 21-25): SPRING BREAK**

**Week 12 (March 28- April 1st): Emotion and Stress**

Reading: Carlson chapter 11 pp 367-388, and chapter 17 pp 601-608.

**Week 13 (April 4-8):** **Affective Disorders**

Reading: Carlson chapter 16, pp 572-584

# Week 14 (April 11-15): Schizophrenia

Reading: Carlson chapter 16, pp 555-570

Exam essay questions distributed Monday, April 11th

 **No Class Friday April 15th (Cognitive Aging Conference)**

**Part IV: Aging and Related Disorders**

**Week 15 (April 18-22): Aging and Neurodegenerative Disorders**

Reading: Carlson chapter 15, pp 543-548

**Mid-Term Exam 3: In-class exam Monday, April 18th.**

**Week 16 (April 25-29): Aging and Neurodegenerative Disorders continued**

**Final Exam scheduled for Period 1: Friday, April 29th, 11:30 AM-2:20 PM**