**Psychology 4020**

**Biological Psychology**

# January 2015

Meeting days: Monday, Wednesday and Friday

Room: 250 J.S. Coon Bldg.

Class time: 9:05 am – 9:55 am

Instructor: Scott D. Moffat, Ph.D.

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Phone: 404-894-6772

Office: Room 133, J.S. Coon Bldg.

Office hours: Monday 10:00 am – 11:00 am; or by appointment

Teaching Assistant: Alexandra Trani

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Office: Room 115, J.S. Coon Bldg.

Office Hours: Monday, 3:00 pm – 4:00 pm or by appointment.

**OPENING NOTE:** This syllabus, by specifying the rules and procedures of this course, helps me to treat students fairly and impartially. The rules listed on this syllabus will be strictly followed. Your decision to remain enrolled in the class indicates that you agree to follow these rules.

**COURSE DESCRIPTION**

PSY 3020 examines the relationship between brain and behavior, taking a biological approach to behavioral questions that have long been of interest to psychologists and philosophers. This course explores the research area of *Behavioral and Cognitive Neuroscience,* a field that seeks brain-based explanations of behavior of humans and animals. More specifically, we will study the structure and function of the nervous system, from the cellular level up to the level of human perceptual, emotional and cognitive function. We will also investigate the effects on these behaviors of damage to the brain and nervous system. This course will provide students with an overview and general understanding of the current knowledge in this field. This knowledge will serve you well as a basis for understanding human behavior, both normal and abnormal.

**TEXT AND LECTURES**

The textbook is optional. While I will not lecture directly from the text, and will not test you on topics presented only in the textbook that are not covered in lecture, I advise that you supplement the lecture material with the assigned readings. The text will provide you with detailed explanations and excellent diagrams to assist with understanding material that can be quite difficult. Older editions of the textbook are also fine though some of the page numbers will be different for the readings. Lecture outlines will be posted on the T Square site for you to download and bring to class (see below for more detailed description of posted lecture notes).

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

Lectures will cover some material that is in the text, as well as a substantial amount of material that is not covered in the text.

**Statement regarding Students with Disabilities**

In accordance with the Americans with Disabilities Act, students with bona fide disabilities will be afforded reasonable accommodation. The ADAPTS Office will certify a disability and advise faculty members of reasonable accommodations. The web site for a student requesting accommodation is:

[www.adapts.gatech.edu/faculty\_guide/sturespon.htm](http://www.adapts.gatech.edu/faculty_guide/sturespon.htm).

**Objectives**

This course will enable students to understand some of the brain mechanisms of human and animal behavior. Specific objectives include:

* Understanding the basic properties of neurons
* Understanding the strengths and weaknesses of the methods that are used to investigate brain function in animals and humans
* Understanding the brain basis of human perception and action
* Understanding the brain basis of complex human cognition such as language and memory
* Gaining an appreciation for how new findings in neuroscience are beginning to influence people, culture and society

#### T SQUARE SITE FOR COURSE

Announcements, course documents such as copies of the syllabus and lecture outlines, as well as grades will be posted in the PSY 3020 T Square site. Once you have registered for this class, you should be authorized to access the course site

**ANNOUNCEMENTS**

At various times during the semester, it may be necessary to make changes in reading assignments, course schedule, or other aspects of the course. Any such change will be announced in class and posted on T Square. You are responsible for all announcements whether or not you are present in class.

**EXAMS**

Your grade for the course will be determined from four exams. Exams will be given on the days indicated in the syllabus. The exams will cover material from class lectures and from the text. They will emphasize major terms, concepts, theories and research findings. Both multiple choice and short answer or essay questions are included.

Exam #1 covers material from the beginning of the course to the date of the first exam. Exam #2 covers the material presented after Exam # 1, up until the date of the second exam. Exam #3 covers the material presented after Exam # 2, up until the date of the third exam. The Final Exam is cumulative but will emphasize material presented after Exam #3 up until the end of the course.

Make-up exams will be given to **ONLY** those students who have a legitimate reason for missing the exam and who have notified the instructor before the time of the scheduled exam. Legitimate reasons for missing an exam include a conflict with a university-approved athletic or performance event, the death of a family member or medical illness. **Supporting documentation will be required**. A grade of zero will be entered for any exam that is missed.

**GRADES**

Your grade will be calculated based on your scores on each exam and weighted according to the percentages shown below.

**Source Percentage Total Points**

Exam 1 20% 100

Exam 2 20% 100

Exam 3 20% 100

Final Exam 40% 200

Total 100% 500

##### Extra Credit 5% 25

Final grades will be assigned as follows, based on performance on the four exams and any extra credit you may have acquired:

|  |  |
| --- | --- |
| Percentage Range | Letter Grade |
| 90 – 100 | A |
| 80 - <90 | B |
| 70 - <80 | C |
| 60 - <70 | D |
| <60 | F |

Anything less than 60% is a failure.

**EXTRA CREDIT**

You can receive a maximum of 5% (25 points) from extra credit. Extra credit will be added directly to your total grade after your final grade is calculated from the exams. Because of the point system in this class, one credit in the SONA system will equate to 1% or 5 points added to your final point total.

You can earn extra credit points, by one of three options:

**Option 1**: You may volunteer to participate in any research experiment or questionnaire study run through the Georgia Tech Psychology Department.

All psychology research experiments are now set-up via an online system. You MUST access this system if you wish to be able to participate in psychological research. To access information about this research system, go to [*http://www.psychology.gatech.edu/research/researchparticipants.php*](http://www.psychology.gatech.edu/research/researchparticipants.php). From there, click “[Sona Experiment Management System](https://gatech-psych.sona-systems.com/)” to enroll in the program or go directly to the sign-up option here.

Each experiment will have details about what it entails, along with how many credits you will receive for participating. Instructors will have more information about how many credits (through participation in psychology experiments or other tasks) are required for the course, or will be allowed for extra credit.

When you sign up for an experiment, write down the date, time, and place of the experiment and the experimenter's name and telephone number (including a telephone number where messages can be left for the experimenter). The staff in the Psychology Department do not keep track of experiment times and places, so you cannot call them to get this information if you forget to write it down.

You will receive 5 extra credit points for each credit the system registers. Check your total at the end of the course. It is your responsibility to correct any errors with the instructor.

**Option 2**: Select an **academic journal article** that can be located on the internet site PUBMED.GOV (<http://www.ncbi.nlm.nih.gov/pubmed/>) on a topic related to Biopsychology and provide me with a 1-page, single-spaced, typewritten summary of the study (12 pt. font, 1 inch margins). The article must be dated 2000 or later and must be pre-approved by me (send me by email or show me in class the title of the article, the authors, the page numbers, and the journal it came from). Otherwise, you do not get credit for the summary. Each summary is worth 5 extra-credit points up to a maximum of 25 points or 5% added to your final grade.

**Option 3**: Any combination of experiments and/or summaries above adding to 25 points or 5% of your grade.

Completing the experiments or journal reviews for extra credit is entirely voluntary. You are not required to do this and your grade will not be adversely affected by not participating. These extra credit assignments are considered “bonuses” that are added to your final grade.

**LECTURE OUTLINES**

At the beginning of every topic, an outline of the lecture will be posted on the T-Square site for you to download and print out. The outline will contain the major points for the topic, organized as they will be covered in class. The purpose of these outlines is to help you understand and remember the material. Some of the essential definitions and key terms and names are written down so you don't have to spend *all* your time in class taking notes. ***However, you should still take notes.*** These outlines don't really EXPLAIN everything -- that's the purpose of the lectures. Resist the temptation to skip lectures and just collect the outlines if you want to do well in this class. **Note that there will be topics covered in lectures that are not covered in the text book and these topics will be covered in all 4 exams.** The lecturer reserves the right to add or delete slides from the posted lectures without notice. **In addition, to further reward people who attend class, there will be certain keywords missing from the posted slides and slides may be covered in each lecture that are not printed on the lecture outlines and are not covered in the text.** The material covered in these slides will have an uncanny tendency to show up on exams. If you miss a lecture, you can get notes from another student in the class or attend my office hours at the scheduled time for extra help. The lecturer reserves the right to change topics which are listed in the course schedule. If a change is made, students will be notified in class.

CLASSROOM COURTESY

To respect the rights of the instructor and your fellow students, all class participants should adhere to the following code of conduct:

1. Late arrival should be an exception (but better late than never). If you are late, sit closest to where you entered so as not to disturb the class.

2. Early departure should be an exception; it is extremely disruptive to both your instructor and your fellow students. This should only occur in an emergency situation or with prior notice with the instructor.

3. Do not prepare for departure until lecture is finished. I will make it clear when it is time to leave.

4. Turn cell phones and pagers off at the start of lecture and DO NOT ANSWER YOUR PHONE IN CLASS!! This includes any form of text messaging.

5. Talking will disturb those who actually wish to hear the lectures and take notes on the material, and it annoys your instructor.

6. Please refrain from other disruptive activities, such as sleeping, doing homework for other classes, reading a newspaper, listening to headphones, checking e-mail , playing video games, etc.

Disruptive individuals will be asked to identify themselves by name and may be asked to leave the classroom. Significant and repeated violations of courteous classroom behavior may result in the involved student’s dismissal from this course.

**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 homework. 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.

**COURSE SCHEDULE** (the instructor reserves the right to alter the topics or course content as needed. Students will be informed of any changes in class and/or on T Square).

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| **DATE** | **TOPIC** | **READING** |
| Jan 5 | Course Introduction | Chapter 1 |
| Jan 7 | Neurons and Neural Transmission | Chapter 2 |
| Jan 9 | Neurons and Neural Transmission | Chapter 2 |
| Jan 12 | Synaptic Transmission and Neurotransmitters | Chapter 2 |
| Jan 14 | Neuroscience Methods I (Animal Methods) | Chapter 5 |
| Jan 16 | Neuroscience Methods II (Human Methods) | Chapter 5 |
| Jan 19 | MLK Day: No class scheduled |  |
| Jan 21 | Basic Neuroanatomy | Chapter 3 |
| Jan 23 | Pharmacology of Drug Abuse I | Chapter 4 |
| Jan 26 | Pharmacology of Drug Abuse II | Chapter 4 |
| Jan 28 | Catch Up and Review |  |
| **Jan 30** | **Exam 1** |  |
| Feb 2 | Vision I: Eye and Retina | Chapter 6 |
| Feb 4 | Vision II: Early Brain Processes | Chapter 6 |
| Feb 6 | Vision III: Later Brain Processes | Chapter 6 |
| Feb 9 | Vision IV: Object and Face Vision | Chapter 6 |
| Feb 11 | Attention |  |
| Feb 13 | Hearing I: Sound and Acoustic Physiology | Chapter 7 |
| Feb 16 | Hearing II: Brain Processes in Hearing | Chapter 7 |
| Feb 18 | Vestibular System | Chapter 7 |
| Feb 20 | Touch and Pain | Chapter 7 |
| Feb 23 | Catch Up and Review |  |
| **Feb 25** | **Exam 2** |  |
| Feb 27 | Sensory Neuroplasticity |  |
| Mar 2 | Sleep and Dreaming | Chapter 9 |
| Mar 4 | Hormones and Sexual Development | Chapter 10 |
| Mar 6 | Hormones and Sexual Behavior | Chapter 10 |
| Mar 9 | Stress Response |  |
| Mar 11 | Movement and Motor Control I | Chapter 8 |
| Mar 13 | Movement and Motor Control II | Chapter 8 |
| Mar 16 | Spring Break: No class scheduled |  |
| Mar 18 | Spring Break: No class scheduled |  |
| Mar 20 | Spring Break: No class scheduled |  |
| Mar 23 | Language Production and Comprehension | Chapter 14 |
| Mar 25 | Spatial Cognition |  |
| Mar 27 | Catch Up and Review |  |
| **Mar 30** | **Exam 3** |  |
| Apr 1 | Memory: Cellular Mechanisms | Chapter 13 |
| Apr 3 | Memory: Brain Systems | Chapter 13 |
| Apr 6 | Memory Systems: Storage and Retrieval | Chapter 13 |
| Apr 8 | Psychiatric Disorders: Emotion and Depression | Chapter 16 |
| Apr 10 | Psychiatric Disorders: Psychosis | Chapter 16 |
| Apr 13 | Neuroscience of Aging |  |
| Apr 15 | Neurodegenerative Disorders | Chapter 15 |
| Apr 17 | Neurodegenerative Disorders |  |
| Apr 20 | Mind and Consciousness |  |
| Apr 22 | Neuroethics |  |
| Apr 24 | Catch Up and Review |  |
| **May 1** | **Final Exam 8:00 am – 10:50 am** |  |