

# Cognitive Neuroscience

Psychology 315

Spring 2015

10:00 – 11:15 a.m. Tuesday and Thursday

Bullock Science Center, 103W

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## Office Hours: Monday and Tuesday 3:30-4:30p.m., or by appointment

Human cognition and perception and their neurophysiological correlates as revealed by functional imaging techniques and clinical populations. Selected topics include basic neuroanatomy and brain imaging techniques and their application to the study of attention, memory imagery, concept formation, language, problem solving, creative thinking and intelligence.

Prerequisite: PSY-101 or PSY-102 (but PSY-101 is preferred), PSY-206, PSY-207 or BIO-210

## REQUIRED READING MATERIAL

Banich, M. T. & Compton, R. J. (2011). *Cognitive Neuroscience*: 3<sup>rd</sup> Edition

**Reading Assignments:** In this course the textbook provides a good foundation of research statistics. In class we will apply this material using demonstrations, group discussions, videos, surveys, and lecture. Additional related information not in your textbook will be covered in class. Students also should be aware of the fact that not all of the material in the textbook can be covered in class, but they are responsible for knowing all of the material in the textbook even if it is not covered in class.

After completing this course, students should be able to do the following:

- ❖ Demonstrate knowledge of the history, methods, questions, findings, theories, and challenges associated with the scientific study of cognitive neuroscience
- ❖ Identify and describe techniques used in cognitive neuroscience research
- ❖ Describe the brain functions and structures that underlie various cognitive abilities
- ❖ Read and write about research articles in the field
- ❖ Apply knowledge of cognitive neuroscience findings to everyday life

These objectives will be met through applied course assignments involving listening, discussing, reading, and writing.

The Psychology department also developed learning objectives for all of the PSY 300-level courses. They include:

- ❖ Students will respect and use critical and creative thinking, skeptical inquiry, and when possible, the scientific approach to solve problems related to behavior and mental processes—Learning Goal 3 of the American Psychological Association Guidelines for the Undergraduate Psychology Major (2006)
- ❖ Every student will have a final paper or comprehensive final exam
- ❖ Every student will write a paper during the semester (in addition to the final paper, if assigned)
- ❖ One of the papers assigned (the one during the semester or during finals) will be a research paper or proposal using APA style and research sources
- ❖ Every student will write a total of at least 12 pages for all papers assigned in the course, which includes the final paper, if assigned
- ❖ Every student will be given questions on exams about research design and methods
- ❖ Every student will participate in an oral presentation for at least 10 minutes
- ❖ Every student will have additional reading materials besides the main book(s) assigned

These objectives will be met through course assignments.

## CLASS COMPONENTS

Test One	100	A = 93 - 100	A - = 90 - 92
Test Two	100	B+ = 87 - 89	B = 83 - 86
Final Exam	130	B - = 80 - 82	C+ = 77 - 79
Individual Literature Review	50	C = 73 - 76	C - = 70 - 72
Group Research Proposal	50	D+ = 67 - 69	D = 63 - 66
Group Presentation	20	D - = 60 - 62	F = 59 or less
Test Prep Questions	15		
What's trending? #neurotalk	15		
Attendance Quiz	20		
TOTAL	500		

**Tests and Final Exam:** For this class there will be two in-class (100 points each) and one final exam (130 points total: 100 points from new material; 30 from old material). The tests will have short-answer and multiple-choice questions from the material covered in class and the textbook. Students are expected to take all tests on the scheduled dates. If an extreme circumstance (illness and workload do not apply) arises then the student should contact the professor prior to the test and the professor will decide what will be done.

To do well on the tests, students must come to class and read the class materials very carefully. Historically, students that have done the best have read the textbook carefully several times, taken notes from the textbook and lectures, and began studying several weeks prior to the tests.

**Test Prep Questions:** One of the best ways to learn material is to test yourself on it (i.e., The Testing Effect: Karpicke & Roediger, 2008). To help you with this, you will get the chance to play the role of the professor! For each exam, you will submit possible test questions one week in advance. Not only will creating questions benefit your understanding of the material, but these will be compiled into a study bank that you can use to prepare for the exam. More detail will be provided during the semester.

**What's Trending? #neurotalk:** Cognitive neuroscience is a fascinating field and many new and exciting discoveries pop up every day. The What's Trending assignment will involve a discussion board about an article or idea that I will post. Once the topic goes up, you will be notified and have one week to make a post and respond to a classmate.

**Research Project:** The research project will consist of three primary components: Individual Literature Review, Group Research Proposal and Group Presentation. (Group work, ick! Why Professor, Why?) I'm glad you asked! Here's why: In almost all workplaces today, working with others is common (not to mention the many creative and practical benefits of working with others). Dealing with possible interpersonal conflicts and allocating work fairly are critical skills to have. Through this process, you will develop these skills and I will help provide you with additional tools for working in a group.

ALL COMPONENTS OF THE RESEARCH PROJECT MUST ADHERE TO APA STYLE!!

**Individual Literature Review:** You will write a research literature review on one of the special topics (to be provided in class). You can start with the information in your textbook, but you will need to reference the primary scientific literature as well (5-7 pages excluding title page, abstract page & references). Further details on the literature review, a rubric for grading, and other details will be provided during the semester. This is worth a total of 50 points.

**Group Research Proposal:** You will be grouped with two others who wrote literature review papers on the same topic. You will combine your newfound expertise to write a research proposal. This paper will summarize the existing knowledge on the topic (i.e., combine and integrate your literature reviews) and propose the "next important step" in the form of a research idea. Further details on the group research proposal, a rubric for grading, and other details will be provided during the semester. This is worth a total of 50 points.

**Group Presentation:** You and your groupmates will put together a presentation to teach the rest of the class about your topic and describe your research proposal idea. The final version must be in APA style. Further details of the paper, and a rubric for grading, will be provided during the semester. This is worth a total of 20 possible points.

**Attendance "Quiz" Points:** It is important to attend lectures in this course, as lectures will involve demonstrations, classroom activities, films, and discussion of material not covered in the textbook. Students are expected to attend class regularly, as regular attendance will contribute to a better overall understanding of course material.

Attendance will be taken at every class meeting. This will be done in the form of a "quiz" at the **beginning of each class**. I will present you with a question(s) and give approximately 5 minutes to make your response without referring to your textbook or notes. Your answer(s) will be submitted with your name and this will serve as your attendance. **IF YOU ARE LATE AND ARE NOT PRESENT BEFORE THE ATTENDANCE QUIZZES ARE COLLECTED, YOU WILL NOT RECEIVE POINTS!**

You will receive ½ point just for being present and another ½ point if you get the correct answer – thus, you can earn up to 1 point for everyday that you attend class. There are 24 class meetings this semester (excluding test days). As you will see detailed in the "Point Allocation" section, attendance quizzes contribute 20 points to your total score. What this means for you is that if you exceed 20 points (by attending everyday or only missing a few days and getting answers correct), these will be extra points added to your total score. You can miss up to 4 days of attendance quizzes without it impacting your total points. Again, if you are late for class and miss the quiz, you cannot retake it and will forfeit your point for the day. If you have an absence excused by the college (e.g., observed religious holiday, death of an immediate family member, participating in a college sporting event, unplanned hospitalization), see me before the absence to discuss.

This is also a good way for you to help identify areas that you might need to study more. This practice is actually in place to help you! Research suggests that repeated **retrieval** is the most effective way to learn. My goal is that by having you actively retrieve the information throughout the semester, you will better learn and remember the information from the course.

Students are expected to actively participate in class discussions and demonstrations. Students are welcomed and encouraged to share their questions, ideas, and insights during class discussions and lectures as long as they do not dominate the conversations. They are expected to respect the values, beliefs, and rights of others in the classroom. Also, students are expected to pay attention to whomever is speaking in class. Students should NOT text or use computers for reasons other than notes. This means no facebook, twitter, email, itunes, youtube, foursquare, pinterest, or anything unrelated to course material! This behavior not only distracts from your ability to learn in my class, but it disrespects and violates the right of other students to attend class and learn in a focused environment. Any students involved in side-conversations unrelated to class discussion, any of the above activities, or in any other behavior that is potentially disruptive to other students' learning may lose their attendance quiz point for the day at the Professor's discretion.

## **OTHER INFORMATION ABOUT THE CLASS**

**Disability Accommodations:** All accommodations for disabilities are authorized through the Office of Academic Advising (please see the contact information listed below). If you are registered with them, please discuss the course and the necessary accommodations with the professor. Both Academic Advising and the faculty respect students' confidentiality when accommodations are made.

Kelly Deasy, Coordinator of Student Disability Services  
Office of Academic Advising and Student Disability Services  
Buttrick 104b  
[404-471-6174](tel:404-471-6174)  
[kdeasy@agnesscott.edu](mailto:kdeasy@agnesscott.edu)

**Course Evaluations:** Students' feedback about this course is valuable to the professor, the psychology department, and the college administration. Students' comments are taken seriously and the comments are used to improve the course in the future. Students will be asked to complete evaluations of the course at the end of the semester.

## **ACADEMIC HONESTY**

The Agnes Scott College honor code embodies an ideal of character, conduct, and citizenship, and is an important part of the College's mission and core identity. This applies especially to academic honesty and integrity. Passing off someone else's work as your own represents intellectual fraud and theft, and violates the core values of our academic community. To be honorable, you should understand not only what counts as academic dishonesty, but also how to avoid engaging in these practices. You should:

- review each course syllabus for the professor's expectations regarding course work and class attendance.
- attribute all ideas taken from other sources; this shows respect for other scholars. Plagiarism can include portraying another's work or ideas as your own, buying a paper online and turning it in as if it were your own work, or not citing or improperly citing references on a reference page or within the text of a paper.
- not falsify or create data and resources or alter a graded work without the prior consent of your professor. This includes making up a reference for a works cited page or making up statistics or facts for academic work.
- not allow another party to do your work/exam, or submit the same or similar work in more than one course without permission from the course instructors. Cheating also includes taking an exam for another person, looking on another person's exam for answers, using exams from previous classes without permission, or bringing and using unauthorized notes or resources (i.e., electronic, written, or otherwise) during an exam.
- not facilitate cheating, which can happen when you help another student complete a take home exam, give answers to an exam, talk about an exam with a student who has not taken it, or collaborate with others on work that is supposed to be completed independently.
- be truthful about the submission of work, which includes the time of submission and the place of submission (e.g., e-mail, online, in a mailbox, to an office, etc.).

You should understand that penalties result from dishonest conduct, ranging from failure of the assignment to expulsion from the college. You should speak with your professors if you need clarification about any of these policies.

### Modified Pledge

Students pledge that they have completed assignments honestly by attaching the following statement to each test, quiz, paper, overnight assignment, in-class essay, or other work:

I pledge that I have neither given nor received any unauthorized aid on this assignment.  
(Signed) \_\_\_\_\_

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### Cognitive Neuroscience Schedule

(Although every effort will be made to follow the syllabus, I reserve the right to make changes.)

Class Date	To Read Before Class	Topic	Assignment Due
Th-Jan 22		Introduction to Course	
T-Jan 27	1	Introduction to the Nervous System	
Th-Jan 29	1	Introduction to the Nervous System	<b>Select Literature Review Topic Preference</b>
T-Feb 3	2	How Neurons Communicate	
Th-Feb 5	2	How Neurons Communicate	
<b>Drop without W:</b> T-Feb 10	2	How Neurons Communicate	
Th-Feb 12	3	Methods	
T-Feb 17	3	Methods	<b>Test Prep Questions Due</b>
Th-Feb 19	3	Methods	
T-Feb 24		<b>TEST ONE</b>	
Th-Feb 26	4	Hemispheric Specialization	
T-Mar 3	4	Hemispheric Specialization	
Th-Mar 5	4	Hemispheric Specialization	
T-Mar 10	6	Early Perceptual Processing	
Th-Mar 12	6	Early Perceptual Processing	<b>Individual Literature Review Due</b>
T-Mar 17		Spring Break	
TH -Mar 19		Spring Break	
T-Mar 24	9	Language	<b>Test Prep Questions Due</b>
Th-Mar 26	9	Language	
T-Mar 31		<b>TEST TWO</b>	
<b>Drop with W:</b> Th-April 2		TBA	
T-April 7	10	Memory	<b>Group Research Proposal Due</b>
Th-April 9	10	Memory	
T-April 14	13	Emotion and Social Cognition	
Th-April 16	13	Emotion and Social Cognition	
T-April 21	16	Generalized Cognitive Disorders	
Th-April 23	16	Generalized Cognitive Disorders	
T-April 28		SpARC	
Th-April 30		Presentations	<b>Test Prep Questions Due</b>
<b>Last Day!:</b> T-May 5		Presentations	
May 8 – May 15 (Seniors: May 7 - May 14)		<b>FINALS WEEK</b>	