

**Department of Psychology and Neuroscience**  
**The University of North Carolina at Chapel Hill**  
**PSYC 434**

Enrollment and Prerequisite: Enrollment is limited to 35 students. Prerequisite for this course are: **PSYC 101 and 210 or 215 and one of the following: PSYC 220, 222, 225, 230; BIOL 450, 455.**

**Target Audience:** This course is designed for undergraduate students who have satisfied the course prerequisites.

**Course Description and Goals:** Cognitive neuroscience is the study of the relation between the brain and the mind. This course will approach cognitive neuroscience by integrating coverage of brain imaging, computer modeling, patient studies, and animal research. We will investigate the domains of hemispheric lateralization, object recognition, spatial processing, attention, language, memory, emotion, and executive functions.

Our goals are to:

- Learn sufficient brain anatomy to understand the relation between structure and function
- Examine several major brain regions and learn the main functions associated with them
- View individual functional domains in terms of underlying brain areas and networks
- Learn the major research methods used in the field
- Consider complex disorders and what cognitive neuroscience can offer toward understanding them

These goals will be attained by extensive reading of the textbook, the book of clinical cases, and selected individual journal articles; as well as by preparing three types of written documents (reflection papers, exams, research paper) to demonstrate a thorough understanding of the material learned in the course.

**Readings (all required)**

- Cognitive Neuroscience (fourth edition) by Gazzaniga, Ivry, and Mangun. This is a reader-friendly, comprehensive textbook.
- The Man Who Mistook his Wife for a Hat by O. Sacks. This is a book of case studies (n=1) in human neuropsychology. The descriptions are interesting, compassionate, and provide the reader with insight into how patients view the world.

**Course Requirements**

- Neuroanatomy Quiz: This quiz – early in the semester – ensures that students learn the neuroanatomical terms that are fundamental to understanding the readings and following class discussion for the course.
- Three Examinations: Exams are non-cumulative – though neuroanatomy material may arise at any time. See below for make-up policy.
- Research Paper: The research paper is to be a minimum of 10 pages (not including references). Your topic should be well focused and approved by me. Explicit guidelines for writing the research paper will be provided.
- Research Poster Presentation: In addition to the written paper, each student will create a scientific research poster of their proposed study, including background, methods, implications, and references.

## Grading Criteria and Due Dates

Neuroanatomy Quiz	%
Exam 1	20%
Exam 2	20%
Research paper	20%
Exam 3 (Final Exam Week)	20%
Research Poster	10%

## Letter Grade Assignments

	A = 94 or higher	A- = 90-93
B+ = 87-89	B = 84-86	B- = 80-83
C+ = 77-79	C = 74-76	C- = 70-73
D+ = 67-69	D = 60-66	F = 0-59

\*Final grades are rounded (.4 down and .5 up). For example 89.4 = 90/B+; 89.5 = 90/A-.

## Course Policies

### Make-up Exams and Extensions

Make-up exams are given ONLY UNDER THE MOST UNUSUAL OF CIRCUMSTANCES. Students who miss an exam - without valid documentation – will receive a zero for that exam. All students must take the final exam on the scheduled date. If you anticipate difficulty with due dates, please let me know as far in advance as possible.

### Attendance and Class Participation

Regular attendance and class participation are expected. If you know you will miss a class, please let me know in advance. All students are responsible for the readings for that class whether or not they are able to attend the lecture. Our ability to engage with the material depends upon everyone's commitment to the success of the class. This commitment entails being present and on time for each class, completing all readings, and engaging in discussion with classmates and the instructor.

### Academic Misconduct

As in all Carolina courses, the Honor Code is in effect. *The Instrument of Student Judicial Governance* requires that you sign a pledge on all written work that says "On my honor, I have neither given nor received unauthorized aid on this assignment." This Code applies to all exams and class projects. Although you may study together for exams, all exams are to be taken without the assistance of other people, books, or notes. Ideas or information in your written work and class presentations must be appropriately referenced, whether the original source is written or verbal. Five or more words taken verbatim from any source must be placed in quotation marks with the source appropriately referenced. If you have questions about any of these matters, please ask. If you have not done so previously, please review the academic code at UNC at [http://integrity.unc.edu/hc\\_handout.html](http://integrity.unc.edu/hc_handout.html).

Suspected cases of academic misconduct must be reported to the Office of the Dean of Students.

Changes to the Syllabus

I do not anticipate any changes to the syllabus. If, however, a change becomes necessary I will announce this in class or by email.

**Course Outline**

GIM = Gazzaniga, Ivry, & Mangun; S = Sacks

<b>Date</b>	<b>Topic</b>	<b>Readings</b>
8/18	History of Cognitive Neuroscience	GIM – Ch 1
8/20	Neuroanatomy	GIM – Ch 2
8/25	Research Techniques	GIM – Ch 3
8/27	Research Techniques II	GIM – Ch 3
9/1	Hemispheric Specialization <b>Neuroanatomy Quiz</b>	GIM – Ch 4
9/3	Hemispheric Specialization II	GIM – Ch 4
9/8	Trip to Biomedical Research Imaging Center in Marsico Hall	
9/10	Sensory and Perception <b>Paper Topic and Abstract Due</b>	GIM – Ch 5; S 1, 3, 18, 20, 7
9/15	Sensory and Perception II	GIM – Ch 5, S 1, 3, 18, 20, 7
9/17	Object Recognition	GIM – Ch 6
9/22	Object Recognition II	GIM – Ch 6
9/24	<b>Exam 1</b>	
9/29	Attention I	GIM – Ch 7, S 8
10/1	Attention II	GIM – Ch 7
10/6	Language I	GIM – Ch 7, 11; S 8, 9
10/8	Language II <b>Research Paper Draft Due</b>	GIM – Ch 11, S 9
10/13	Memory I	GIM – Ch 9, S 2, 15
10/15	<b>NO CLASS – Fall Break</b>	
10/20	Memory II	GIM – Ch 9, S 12, 16, 17
10/22	<b>Exam 2</b>	
10/27	Action	GIM – 8
10/29	Emotion	GIM – 10
11/3	Emotion II	GIM – 10
11/5	Cognitive Control	GIM – 12, S 13
11/10	Cognitive Control II	GIM – 12, S 19
11/12	Social Cognition	GIM – 13
11/17	Social Cognition and Consciousness <b>Research Papers Due</b>	GIM – 14
11/19	Consciousness, Free Will, and the Law	GIM – 14

11/24	Research Poster Presentations (Group 1)	
11/26	<b>NO CLASS – Thanksgiving Break</b>	
12/1	Research Poster Presentations (Group 2)	
12/8 (at 8am)	<b>Final Exam</b>	

### Final Exam Schedule

We are required to have our final exam on December 8th at 8am. If you have two exams at the same time or three exams within 24 hours and you want to reschedule the exam, then see an academic advisor for an exam excuse form. Please give me the pink copy of your exam excuse form on or before our last lecture meeting. When you turn in your form, you will be provided with the date, time, and location of the alternate exam.