

HUMAN NEUROPSYCHOLOGY (PSY 449/549)

University of Oregon

Winter 2016

MW 2:00-3:20pm ♦ Lillis 112 ♦ 4 credits ♦ CRN: 27354, 27355

<http://canvas.uoregon.edu>



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Required Texts

- ♦ Gazzaniga, M., Ivry, R.B., & Mangun, G.R. (2013). *Cognitive Neuroscience: The Biology of the Mind*. (4th Ed). New York, NY: W. W. Norton & Company.
(Available at the Duckstore).
- ♦ Sacks, O. (1998). *The Man Who Mistook His Wife for a Hat and Other Clinical Tales*. Touchstone Books.
(Available at the Duckstore).
- ♦ Selected articles
(Available as PDF files on Canvas)

Course Overview

This course will examine how studies of neurological disorders and neuroimaging techniques are being used to gain insight into human mental processes, including object recognition, attention, memory, language, emotion, and cognitive control. We will consider dominant theories of the neural underpinnings of these cognitive processes and explore how research on normal and abnormal neural processes has led to those theories. In addition to learning about classic research in human neuropsychology and cognitive neuroscience, you will read and critique ground-breaking and cutting-edge research articles and discover how research in the field is transforming and enhancing our understanding of how the brain gives rise to the mind.

Learning Outcomes

By the end of this course you should be able to:

- ♦ Identify major theories, research findings, and methodological approaches in cognitive neuroscience;
- ♦ Critically examine research in human neuropsychology/cognitive neuroscience and communicate your ideas clearly and effectively;
- ♦ Evaluate how cognitive neuroscience is reshaping our understanding of the human mind and brain.

Student Workload

When you complete this course, you will earn 4 credits toward your degree. Four credits are the equivalent of 120 hours of work across the term, or 12 hours per week for 10 weeks. You will spend 3 hours in class each week. The other 9 hours will be spent completing reading assignments, writing discussion questions, studying for quizzes and exams, and working on your paper assignment. Most weeks you should plan to spend about 6 hours on reading and quiz preparations. Your workload will increase when you are studying for the midterm and the final exam, and when you are working on your paper assignment and revising your paper.

Course Requirements

Reading Assignments

You should complete the assigned readings **before** coming to class. For each topic, the reading assignments will generally consist of background readings from the Gazzaniga text, followed by readings from the Sacks book and/or empirical articles, which we will critically evaluate as a class. The Sacks book sympathetically describes case histories of neurological disorders, and the empirical articles will give you practice reading primary research articles in cognitive neuroscience.

Discussion Questions

To facilitate class discussion, you will sometimes be required to come to class with a discussion question – a query, puzzle, or issue about the assigned reading for that day that you would like to have discussed in class. (See the Course Schedule on p. 4 for specific dates). **These questions must be submitted on the Canvas discussion forum by noon on the day of the class session.** Your diligence and thoughtfulness in meeting this requirement, along with your regular attendance and participation in class, will count for 10% of your grade in this course. There are no make-ups for missed discussion question submissions.

Quizzes

Short quizzes will be given at the beginning of some classes (see the Course Schedule on p. 4 for specific dates). Quizzes will contain several multiple-choice questions that pertain to recently presented course material and the assigned readings. Questions will occasionally be drawn from readings that have been assigned but have not yet been discussed in class (even those due the day of the quiz); however, these questions will be of a more general nature and should be easily answered if you have read the material.

Of the seven quizzes, the two with the lowest scores will be dropped, with the average score of the remaining five yielding 15% of your final grade. **No make-up quizzes will be offered;** if you miss a quiz, that grade will be one of the two that will be dropped.

Exams

There will be one midterm in this course and a final exam, each composed of multiple-choice and short-answer questions. Exam questions will be based on material presented in class and material from the reading assignments, and will require you to go beyond memorization to apply, analyze, and synthesize information. The final exam will not be cumulative.

Make-up exams are not permitted except in emergency situations. If unforeseen circumstances prevent you from taking an exam, you are responsible for notifying me **immediately** and providing written documentation.

Literature Critique Paper (Undergraduate students enrolled in PSY 449 ONLY)

The objective of the literature critique paper is for you to think critically and independently about cognitive neuroscience research and communicate your ideas effectively. For this paper assignment, you should carefully read one of the pre-selected empirical articles (available on Canvas), briefly summarize it, critique the methods and conclusions, and propose a thoughtful follow-up study. Papers should be 4-5 double-spaced pages. Additional information about this assignment will be provided in a separate handout. We will discuss the paper assignment in class and also practice critiquing research articles in class. **A hard copy of your literature critique paper is due at the beginning of class on Monday, February 15.**

You will also have an opportunity to revise your critique paper one time based on the feedback you receive. **This optional revision is due at the beginning of class on Wednesday, March 9.** If you choose to revise your paper, the original version will be worth 10% of your course grade, and the revised version will be worth 10%. If you opt not to revise your paper, your original version will be worth 20% of your course grade. Late papers will be penalized one letter grade per partial or full day late, in fairness to those who submit their papers on time.

Research Proposal Paper (Graduate students enrolled in PSY 549 ONLY)

The research proposal will allow you to explore a research topic related to cognitive neuroscience in depth and propose a novel experiment to address an unanswered question. The proposal should include a literature review (going beyond the readings discussed in class), experimental design, predicted results, and a discussion of the study's implications. Research proposals should be approximately 10-12 pages (double-spaced) in APA format and include at least 10 references. More details will be provided in a separate handout.

Grading

Final grades in this course will be determined by the following:

- ◆ Participation: 10%
- ◆ Quizzes: 15%
- ◆ Midterm: 25%
- ◆ Paper: 20%
- ◆ Final Exam: 30%

Grades will be distributed as follows:

A+	97-100%	B+	87-89%	C+	77-79%	D+	67-69%
A	93-96%	B	83-86%	C	73-76%	D	60-66%
A-	90-92%	B-	80-82%	C-	70-72%	F	0-59%

Please see the psychology department guidelines for a description of the type of achievement that each grade signifies: <http://psychology.uoregon.edu/courses/department-grading-standards/>

Class Policies

Etiquette

As a courtesy to me and to your fellow classmates, please arrive on time for class and stay for the duration of the class period. Getting up in the middle of class is very disruptive. Please turn off cell phones and any electronic devices that might be distracting to others at the beginning of class.

Academic Integrity

All work submitted in this course must be your own. Violations will be taken very seriously and are noted on student disciplinary records. If you have any questions about what constitutes academic dishonesty, please ask! For more information, see the UO website regarding academic honesty at:

<https://uodos.uoregon.edu/StudentConductandCommunityStandards/StudentConductCode.aspx>

For papers, you must cite all of your sources. Whenever you refer to an idea that is not your own, whether it is a quotation or you are paraphrasing, you must cite and reference the source. If you are unsure about what constitutes plagiarism, please ask! The UO library website also has a helpful page on avoiding plagiarism: <http://researchguides.uoregon.edu/citing-plagiarism>

Accessible Education Center (AEC)

The University of Oregon is working to create inclusive learning environments. If you have a documented disability and anticipate needing accommodations in this course, please notify me as soon as possible. Also, please request that a counselor at the Accessible Education Center (uoaec@uoregon.edu, tel. 541-346-1155) send a letter verifying your accommodations. For a list of resources provided by the Accessible Education Center, please see <http://aec.uoregon.edu>.

Students for Whom English is a Second Language

If you are a non-native English speaker and think you may have trouble in this course due to language difficulties, please see me as soon as possible to make any necessary special arrangements.

Course Schedule

**This schedule may be revised during the course of the term.*

Week	Date	Topic	Reading	Quizzes/Assignments
1	M 1/4	Course introduction		
	W 1/6	Cognitive neuroscience methods	Gazzaniga Ch. 3	
2	M 1/11		Sacks Ch. 15 Semendeferi et al. (2002)	Discussion Q1
	W 1/13	Hemispheric specialization	Gazzaniga Ch. 4	Quiz 1
3	M 1/18	MLK Jr. Day – No class		
	W 1/20	Object recognition	Gazzaniga Ch. 6	Quiz 2
4	M 1/25		Sacks Ch. 1 Gauthier et al. (2000)	Discussion Q2
	W 1/27	Attention	Gazzaniga Ch. 7	Quiz 3
5	M 2/1		Sacks Ch. 4 & 8 Neville et al. (2013)	Discussion Q3
	W 2/3	Midterm		*Midterm*
6	M 2/8	Memory	Gazzaniga Ch. 9	
	W 2/10		Sacks Ch. 2 Hassabis et al. (2007) Squire et al. (2010)	Discussion Q4
7	M 2/15	Language	Gazzaniga Ch. 11	*Paper due* Quiz 4
	W 2/17		Sacks Ch. 9 Bedny et al. (2012)	Discussion Q5
8	M 2/22	Emotion	Gazzaniga Ch. 10	Quiz 5
	W 2/24	Cognitive control	Gazzaniga Ch. 12 (p. 507-520, 532-555)	
9	M 2/29		Sacks Ch. 13 Ophir et al. (2009)	Discussion Q6
	W 3/2	Decision making	Gazzaniga Ch. 12 (p. 520-532) Gazzaniga Ch. 13 (p. 592-599)	Quiz 6
10	M 3/7		Sacks Ch. 19 McClure et al. (2004)	Discussion Q7
	W 3/9	Recap & review		*Revision due* Quiz 7
11	W 3/16 2:45pm	Final exam		*Final exam*

Reading List

In addition to the Gazzaniga text and Sacks book, you will be reading the following empirical articles. Each reading is posted on Canvas and is assigned to a particular class session.

Semendeferi, K., Lu, A., Schenker, N., & Damasio, H. (2002). Humans and great apes share a large frontal cortex. *Nature Neuroscience*, 5(3), 272-276.

Gauthier, I., Skudlarski, P., Gore, J. C., and Anderson, A. W. (2000). Expertise for cars and birds recruits brain areas involved in face recognition. *Nature Neuroscience*, 3(2), 191-197.

Neville, H. J., Stevens, C., Pakulak, E., Bell, T. A., Fanning, J., Klein, S., & Isbell, E. (2013). Family-based training program improves brain function, cognition, and behavior in lower socioeconomic status preschoolers. *Proceedings of the National Academy of Sciences*, 110(29), 12138-12143.

Hassabis, D., Kumaran, D., Vann, S.D., & Maguire, E.A. (2007). Patients with hippocampal amnesia cannot imagine new experiences. *Proceedings of the National Academy of Sciences*, 104(5), 1726-1731.

Squire, L.R., van der Horst, A.S. McDuff, S.G.R., Frascino, J.C., Hopkins, R.O., & Mauldin, K.N. (2010). Role of the hippocampus in remembering the past and imagining the future. *Proceedings of the National Academy of Sciences*, 107(44), 19044-19048.

Bedny, M., Caramazza, A., Pascual-Leone, A., Saxe, R. (2012). Typical neural representations of action verbs develop without vision. *Cerebral Cortex*, 22(2), 286-293.

Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences*, 106(37), 15583-15587.

McClure, S. M., Li, J., Tomlin, D., Cypert, K. S., Montague, L. M., & Montague, P. R. (2004). Neural correlates of behavioral preference for culturally familiar drinks. *Neuron*, 44, 379-387.