

Course Objectives:

The goal of this course is to introduce ideas of how human behavior is linked with what is happening in the brain. Cognitive neuroscience continues to be a “hot” field and there is much enthusiasm about the applications of this research. This is evidenced by the regularity with which articles appear on this topic in the popular press. For example, Pixar released “Inside Out”, set inside the brain of a teenage girl. Reporting in the neurosciences is particularly prone to sensationalism and misinformation (Illes, 2010). Understanding the intricacies of cognitive neuroscience will help you to evaluate claims made by the media and policymakers concerning the applications of this kind of research. Can we detect if someone is lying using fMRI? Should students learning math be banned from using calculators in class because their frontal lobes are not active when they do so? These questions are of interest to society at large because they have implications for criminology, education, advertising, etc... After completing this course, you will have a basic understanding of neuroscientific methods, the anatomy of the brain, and how the brain gives rise to cognition, action, and emotion. This knowledge will help you to interpret for yourself how this research should be used and to what extent these findings are applicable to more wide-ranging issues.

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Required reading:

MS Gazzaniga, RB Ivry, GR Mangun. “Cognitive Neuroscience: The Biology of the Mind” **5th Edition (2019)**

Readings list posted online

Course grading:

Exams (3 x 20%)	60%
Blog Entry/Tweet/FB post	15%
Reading questions	12%
Vocabulary quizzes (Best xx of xx)	8%
In class activities	5%

Exams:

There will be three exams. Each exam will be composed of multiple choice and short answer questions.

Blog Entry/Tweet/FB post

One of my educational goals is to use social media to inform the general public about cognitive neuroscience research. I post content about my research through my lab blog (ravizzalab.wordpress.com), Facebook page (Cognitive Control Neurolab) and twitter account (ravizzalab). Every week 12 students (chosen randomly) will write a blog entry about a recent finding in cognitive neuroscience. The finding must be something reported in the press which you can find by searching Science Daily, Google News, or other news outlets. The reported finding must:

- 1) be in *cognitive* neuroscience. Therefore, it must tell us something about how people use their brains to *think* or *behave*. Clinical studies of what causes a disease (for example, Alzheimer's) are **not** appropriate because it doesn't explain how people with the disease think. A study showing the kinds of thinking or movement problems associated with a disease are appropriate. If you have any doubts if your topic is appropriate, feel free to ask either me or the TA.
- 2) describe the results of an experiment and not just the reporter's opinion.
- 3) be in the press in the last 10 days
- 4) be associated with a link

Blog entries should be relatively informal and written in lay language that could be easily understood by someone with no background in cognitive neuroscience. Of course, grammar and spelling need to be correct. Blog entries should be about 500 words. At the bottom of the blog, you should write a post that could be used on Facebook and Twitter. You are NOT required to post them yourselves on your personal feeds. **Instead, we will pick the best of the bunch each week and post the blog, FB post, and tweet on the Internet (anonymously if the winner prefers).**

The list of due dates will be posted on D2L and the first blog will be due Wednesday, September xx. Blog entries should be uploaded to D2L in the appropriate dropbox. Late blogs will be penalized 1 point for every day they are late. Please put your due date in your calendar - you will receive no reminders about when it is due!

Points for the blog, tweet, and post are determined in the following manner:

Appropriate topic	2 pts.
Finding is clearly described	4 pts.
Your opinion on why the finding is important or not	4 pts.
Link is provided	1 pt.
Facebook post	1 pt.
Tweet (<140 characters)	1 pt.
Spelling Grammar	2 pts.
<hr/> TOTAL	15

Reading questions

Each week you will be assigned a supplemental reading (links on D2L). You are required to upload 2 questions that you had after reading the paper. These questions can be either philosophical (why do we need two hemispheres?) or straightforward requests for clarification (How do some people's hemispheres get disconnected?). Questions should be uploaded to D2L by **Friday at midnight** the week they are due. Students will receive 1 point for each set of questions turned in on time and that are legitimate questions. Total number of points is 12.

Vocabulary quizzes

Each **Friday** we will have a quiz on vocabulary at the beginning of the class. Answers will be recorded through iclickers. **You must register your clicker online on D2L.** Go to the Content tab and then click on the clicker reg module on the left hand side of the page. Click Register your iclicker. There is a FAQ list on the right-side of the page if you need help. It is expected that you will bring your clicker to class. **If you forget your clicker or if your batteries are dead, you cannot obtain credit for that quiz - no exceptions.** I recommend that you keep a spare set of batteries with you so that if your batteries should die, you will have a spare. Please understand that in a large class, there will be at least one person who forgets their clicker each day and the instructor simply cannot give credit in these circumstances. However, quiz scores will be determined on the best 8 of 12 quizzes so that even if you miss a day it won't affect your grade.

In-class activities

We will watch a video or a podcast most weeks of the class and then do a short in-class assignment and discussion. Credit will be given automatically if you are in class that day. However, if I call on you and you are not in class or have not thought about the assignment, you will not receive credit that day. Total points = 10.

Extra credit

If you would like to obtain extra credit, you can comment on the blogs posted on ravizzalab.wordpress.com. You can make up to two comments – each worth 1% of your grade. The comments should be on two different blogs. **Comments should be substantive and not just say “nice job”. Comments also need to be polite!** Your comment will not show up immediately on the blog. **All comments need to be made by 12/6/19 to receive credit.**

Grading scale:

90% and above = 4.0

85% - 89.9% = 3.5

80% - 84.9% = 3.0

75% - 79.9% = 2.5

70% - 74.9% = 2.0

65% - 69.9% = 1.5

60% - 64.9% = 1.0

59.9% and below = 0.0

Emergencies and Schedule Conflicts:

You may take a makeup exam in case of: 1) a documented medical emergency, or 2) a schedule conflict that you know about in advance such as a religious holiday or sports travel. In either case, please send email identifying the emergency **ASAP**. In case of a schedule conflict, you must send this email **at least a week in advance** of exam day. Do not assume I have gotten your email unless I have responded to you.

In either case, you may take the exam either at a different time on the exam day or the day after. If you cannot take the exam on one of those two days, then that exam will be omitted from your final score and its points distributed over the other exams. If you miss an exam for any other reason or don't notify me about your emergency or conflict, your score will be 0.

Class schedule

Lecture	Date	Topic	Textbook	Readings
1	8/30/2019	Intro/What is cognitive neuroscience?	GAZ 2: 23-39, 53-61, 67-68	#1 The Adult Brain Does Grow New Neurons After All, Study Says (Due 9/6)
2	9/4/2019	Principles of Neuroscience	GAZ 3:83-111	#2 What is synesthesia? (Due 9/11)
3	9/6/2019	Methods in Cognitive Neuroscience	GAZ 5: 169-190	
4	9/11/2019	Perception: The senses	GAZ 5: 190-210	#3 Seeing it differently: visual processing in autism (Due 9/18)
5	9/13/2019	Perception: The visual system IN CLASS ASSIGNMENT	GAZ 6: 223-232, 242-247	
6	9/18/2019	Perception: Object recognition – IN CLASS ASSIGNMENT	GAZ 6: 248-270	
7	9/20/2019	Perception: Are faces special? IN CLASS ASSIGNMENT		
	9/25/2019	Review/Wrap-up		
	9/27/2019	Exam 1	GAZ 7	#4 A rhythmic theory of attention (Due 10/4)
8	10/2/2019	Attention: Mechanisms of selective attention	GAZ 7	
9	10/4/2019	Attention: Disorders IN CLASS ASSIGNMENT	GAZ 8	#5 This is your brain on sports (Due 10/11)
10	10/9/2019	Motor: Cortical pathways and disorders	GAZ 8	
11	10/11/2019	Motor: Subcortical pathways and disorders IN CLASS ASSIGNMENT		#6 The discovery of super memories (Due 10/18)
12	10/16/2019	Motor: Brain-machine interface	GAZ 9 379-384; 389-403	
13	10/18/2019	Memory: Pathways and disorders IN CLASS ASSIGNMENT		#7 The forgotten part of memory (Due 10/25)
14	10/23/2019	Memory: Hippocampal function	GAZ 9 416-423	
15	10/25/2019	Memory: Forgetting		
	10/30/2019	Review/Wrap-up		
	11/1/2019	Exam 2	GAZ 11 475-492	#8 What singing mice tell us about human neuroscience (Due 11/8)

16	11/6/2019	Language: Pathways and disorders IN CLASS ASSIGNMENT	GAZ 11 496-508	
17	11/8/2019	Language: Levels of Processing	GAZ 4 125-159	#9 The split brain: A tale of two halves (Due 11/15)
18	11/13/2019	Hemispheric specialization IN CLASS ASSIGNMENT	GAZ 9 384-389;	Mobile technology habits: patterns of association among device usage, intertemporal preference, impulse control, and reward sensitivity (Due 11/22)
19	11/15/2019	CLASS CANCELLED	GAZ 12 515-539; 554-563	
20	11/20/2019	Cognitive control - working memory	GAZ 10 427-439; 445-454	
21	11/22/2019	Cognitive Control - executive function IN CLASS ASSIGNMENT	GAZ10 459-471 GAZ 13: 567-569; 584-608	#11 Do dogs prefer praise or food? (Due 11/29)
22	11/27/2019	Affective Neuroscience IN CLASS ASSIGNMENT	GAZ 14 613-639	
	11/29/2019	Thanksgiving		#12 Do Brain Scans of Comatose Patients Reveal a Conscious State? (Due 12/6)
	12/4/2019	Consciousness		
	12/6/2019	Review/Wrap-up		
	12/10/2019	Final Exam (12:45-2:45)		

Academic Honesty

Article 2.3.3 of the [Academic Freedom Report](#) states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the Psychology Department adheres to the policies on academic honesty as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades*; the all-University Policy on *Integrity of Scholarship and Grades*; and Ordinance 17.00, Examinations. (See [Spartan Life: Student Handbook and Resource Guide](#) and/or the MSU Web site: www.msu.edu.) Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the www.allmsu.com Web site to complete any course work in Psychology 301. Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact your instructor if you are unsure about the appropriateness of your course work. (See also <http://www.msu.edu/unit/ombud/dishonestyFAQ.html>) events in a more confidential setting you are encouraged to make an appointment with the MSU Counseling Center.

Limits to Confidentiality

Essays, journals, blogs and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, may not be able to maintain confidentiality when it conflicts with their responsibility to report certain issues based on external legal obligations or that relate to the health and safety of MSU community members and others. As the instructor, I must report the following information to other University offices if you share it with me:

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child
- Allegations of sexual assault or sexual harassment when they involve MSU students, faculty, or staff, and
- Credible threats of harm to oneself or to others.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like to talk about these