

**PSY 370 – COGNITIVE NEUROSCIENCE  
GRAND VALLEY STATE UNIVERSITY  
WINTER, 2021**

**Section 01: TR 11:30 am - 12:45 pm, Online  
Section 02: TR 1:00 pm – 2:15 pm, Online**

**INSTRUCTOR:** Joel Quamme, Ph. D.  
**OFFICE:** 1311 Au Sable Hall  
**PHONE:** 1-2153 (not recommended)  
**E-MAIL:** [quammej@gvsu.edu](mailto:quammej@gvsu.edu) (recommended)  
**OFFICE HOURS:** TR 10:00 am – 11:15 am, or by appointment. I will hold all meetings virtually via Zoom. To visit office hours, please first schedule an appointment at <https://quammej.youcanbook.me>. Or email me to schedule an appointment for another time.

**REQUIRED TEXT:**

Ward, J. (2019). *A Student's Guide to Cognitive Neuroscience*. 4th ed. New York, NY: Taylor & Francis. ISBN-13: 9781848722729

Additional article readings will be made available on Blackboard.

Also, because this is an online class, you will need:

- Access to a High-speed internet connection
- A computer with a sound card and speakers, and an operating system that meets browser requirements for Blackboard (Windows 8 and above; OS 10.12 or above)
- Microsoft Word & the ability to read PDF files
- A device with video camera and microphone

**PREREQUISITES:**

Completion of Psychology 101 (Introduction to psychology) and Junior standing or higher.

**COURSE DESCRIPTION**

*Cognitive Neuroscience* seeks to explain how the brain gives rise to the functions of the mind. This class will explore the neural basis of higher cognitive processes, including object recognition, attention, memory, language, and executive control, as well as interactions among cognition, emotion, and social processes. The course emphasizes contemporary theories of how cognitive processes are implemented in the brain, and the findings of empirical research into brain-cognition relationships.

Students will be introduced to the wide variety of methods used by cognitive neuroscientists to understand the brain substrates of cognition, including studies of patients with neuropsychological impairments, functional imaging and electrophysiological recording of brain activity during cognitive performance, electrical and magnetic stimulation of brain regions, computational modeling of neural systems, and the analysis of behavioral performance. We will critically examine how cognitive neuroscientists use these methods to draw inferences about the neural basis of cognition, and how the findings of cognitive neuroscience research are presented to the public.

## COURSE OBJECTIVES

My goal is that by the end of the course, students will be able to:

- Identify the historical roots of the modern study of cognitive neuroscience, including major philosophical and scientific developments.
- Describe the modern methods of cognitive neuroscience, analyze their strengths and weakness, and evaluate their application to different kinds of research problems.
- Analyze contemporary theories and evidence of the neural bases of core cognitive processes, including attention, memory, language and higher cognitive processes.
- Comprehend primary literature on the neural basis of cognition, and draw scientific conclusions from data of cognitive neuroscience studies.
- Critically evaluate claims about the neural basis of cognitive phenomena, such as those encountered in popular media.

## COURSE FORMAT

This course is conducted entirely online, and is administered through GVSU's Blackboard system and will be partially-synchronous. On some Tuesdays and Thursdays, we will meet virtually during class time using Blackboard Collaborate Ultra. On other days, however, rather than meet virtually, we will have asynchronous days where I will post lecture videos for you to watch on your own. We will have a weekly schedule of activities in which you will have reading assignments to complete, some video lectures to view, posted on particular lecture days, and virtual class meetings on other days. Assignments, quizzes and exams will be posted on blackboard with deadlines for completion. To be successful, it will be important for you to keep close track of the course schedule as well as checking blackboard regularly for updates in order to stay on top of material and complete assigned tasks in a timely manner once they are announced and made available.

**Blackboard.** Our course webpage on Blackboard will contain all important information about the course, including announcements, important dates, lecture videos, study objectives for each topic we cover, details of all graded assignments and activities, and grades. We will use blackboard for administration of all quizzes and exams, and submission of assignments. Students will be responsible for all information provided on Blackboard, and it will be your responsibility to check our blackboard page regularly for announcements and other materials – you will likely need to check in to the Blackboard course page 4-5 times during the week in order to complete all course requirements. To Access Blackboard, go to <https://mybb.gvsu.edu/> and enter your log in and password.

**Synchronous class meetings.** The purpose of synchronous meetings is to have an opportunity to interact in a manner analogous to an in-person class. Attending synchronous meetings when we have them is important because some of the material we will cover in this class is most effectively addressed by participating in certain activities, demonstrations, exercises, and discussions in real-time. These meetings will also be used to introduce some new lecture material, review course material from previous lectures and give you a chance to ask questions, which will be valuable opportunities because much of what we will cover can be challenging to understand. **Thus, you should avoid missing these class meetings if possible.**

I will record these synchronous meetings and make them available on blackboard, so if you must miss a synchronous class meeting, make them available on blackboard. I will not share these recordings outside of this course, and students are not permitted to share class recordings outside of this course. If you do not

wish to appear in the video or audio of the recording, you may turn off your camera and microphone, and use the chat function to communicate.

Whenever we meet virtually, you should have completed all readings assigned for the week, and watched any previously-posted lecture videos ***before*** class. I may also sometimes assign work to complete before a class meeting (e.g., written responses to some question), and will announce anything to prepare for class at least at least one week ahead of time.

See the schedule below for a tentative schedule of synchronous and asynchronous days. It is possible some of the synchronous days will move to asynchronous instead, and if that happens I will notify you by blackboard at least one week ahead of the day in question. It is also possible we may switch to Zoom instead of Blackboard Collaborate Ultra; if so I will announce that and update the virtual class link on Blackboard.

**Readings.** Students will be responsible for reading the assigned textbook chapter or article for each class topic ***before*** class meetings in the weeks they are scheduled. Several additional articles are also be assigned and made available on blackboard. We'll discuss use some of the article readings for written assignments and discuss them in class. All assigned readings from the textbook and article assignments will be fair game for exams and quizzes. Thus, it is likely that ***your grade will suffer if you do not keep up with the assigned reading.***

## GRADING

Grades will be computed based on your performance on three exams, a number of quizzes covering material from the week, and some written assignments based on assigned articles.

<b>3 Non-cumulative Exams:</b>	<b>60%</b>
<b>Weekly Quizzes:</b>	<b>20%</b>
<b>Assignments:</b>	<b>20%</b>

**Grading scale.** The percentage of total credit you earn will be converted to letter grades according to the following scheme:

A	100-94	A-	90-93	B+	87-89	B	83-86
B-	80-82	C+	77-79	C	73-76	C-	70-72
D+	67-69	D	60-66	F	59 or lower		

**Exams.** There will be three ***non-cumulative*** exams, each worth 20% of your grade (for a total of 60%). The exams will contain a mix of multiple choice and other formats such as short answer, completion, and labelling. The material tested on exams will come from assigned textbook and article readings, lecture videos, and activities and discussions from class meetings. Exams will be administered on blackboard. On exam days, the exam will be available from 8am to 11:59pm. You can begin the test whenever you are ready within this time window. However, there will be a time limit once you start. These exams are open book/notes so you will be able to refer to notes and other course materials. However, many questions on the exam will require you to apply information you have learned in novel ways, so you won't be able to simply look up all the answers (and you will likely run out of time if you try). Thus, you should be sure to prepare for all exams just as you would if it were not open book/notes.

Re-scheduling or making up an exam will be allowed solely at my discretion. I will excuse a missed exam related to a university-sanctioned event, a personal illness, family emergency, or major religious holiday

provided you (1) can give me advance notice of at least one week (if your absence is foreseeable), or a timely explanation on your return (if the absence is unforeseeable), and (2) you can provide me with documentation from an appropriate faculty member, university administrator, physician, or clergy member. An unexcused absence from an exam will constitute a score of 0.

**Quizzes.** During most weeks there will be a multiple-choice quiz covering the more fundamental points of the assigned material from that week. When a quiz is due, it will be posted to Blackboard on Thursday and due Sunday night, by 11:59. Quizzes may be completed at any time before the deadline once they are available. Once begun, there will be a time limit in which you must complete the quiz, but you are free to consult the book, notes, lecture/class recordings while taking it. If you miss a quiz, I will accept it up to 3 days late at half-credit. I will let you skip one without any penalty.

**Assignments.** There will also be a number of written assignments to complete as well. These will involve answering questions about some of the assigned readings and relating them to material from lecture and textbook. The assignment questions will be posted in a Microsoft Word document on blackboard at least one week before they are due. There will be assignments posted for six of the article readings on the schedule but I will count 5 of them toward your grade, so you can skip one without penalty. Details about each assignment will be announced on blackboard.

## **PLAGIARISM**

According to the 2008/9 GVSU Student Code, Section 223.01: “Any ideas or material taken from another source for either written or oral presentation must be fully acknowledged. Offering the work of someone else as one's own is plagiarism. The language or ideas taken from another may range from isolated formulas, sentences, or paragraphs to entire articles copied from books, periodicals, speeches or the writings of other students. The offering of materials assembled or collected by others in the form of projects or collections without acknowledgment also is considered plagiarism. Any student who fails to give credit in written or oral work for the ideas or materials that have been taken from another is guilty of plagiarism.” **Detected plagiarism may result in a grade of 0% on any paper or assignment on which it occurs, and possibly an F in the course. You have been warned.**

## **ELECTRONIC DEVICES**

Please turn all cell phones, pagers and other electronic devices with audible signals or alarms OFF during any virtual class meeting.

## **ACCOMODATION FOR DISABILITY**

Any student in this class who has special needs because of a learning, physical, or other disability, please contact me or Disability Support Resources (DSR) at 331-2490.

## **CLASS SCHEDULE**

The following schedule of class topics, reading assignments and due dates is tentative, and may need to be modified later in the course. I will announce any changes to the schedule on blackboard. Days on which we will plan to have a virtual class meeting are indicated with an asterisk. Some synchronous meeting dates may be changed to asynchronous lectures, but **no asynchronous dates on the schedule will ever change to synchronous meetings.**

Unless otherwise indicated, scheduled readings should be completed before class time whenever there is a synchronous class meeting.

Week	Topics & class dates	Reading / Assignment due
	<b>M 1/18 - MLK Day</b>	
1	Course Orientation & Foundations *T 1/19 – Virtual Class Meeting R 1/21 – Asynchronous lecture posted	SYLLABUS WARD, CH 1
2	Neurons & Neuroanatomy *T 1/26 – Virtual Class meeting R 1/28 – Asynchronous lecture posted	Dennett, 1978 (for Tue.) WARD, CH. 2 (for Thur.)
3	Neuroanatomy, Functional Modularity & Lesion methods T 2/2 – Asynchronous Lecture posted *R 2/4 – Virtual class meeting	WARD CH. 5 (pp. 87-100, 102-113) Ramachandran, 2005
4	Cognitive Electrophysiology & Brain Imaging T 2/9 & R 2/11 asynchronous lectures posted	WARD, CH 3 WARD, CH.4 (pp. 55-66, 72-79)
5	Methods Review & Exam *T 2/16 Virtual class meeting <b>R 2/18 EXAM 1 (Thursday)</b>	Beck, 2010
6	Object recognition processes T 2/23 asynchronous lecture posted *R 2/25 Virtual class meeting	WARD, CH. 6 (152-172) Haist et al., 2010
7	Attention T 3/2 Asynchronous lecture posted *R 3/4 Virtual class meeting	WARD, CH. 9 Saj et al., 2018
8	Memory I T 3/9 & R 3/11: Asynchronous lectures posted	WARD, CH. 11 (265-278)
9	Memory II 3/16: Asynchronous lecture posted *3/18: Virtual class meeting	WARD, CH 11 (278-298) Westerberg et al., 2015
10	EXAM 2 & Hemispheric lateralization <b>T 3/23: EXAM 2</b> *R 3/25: Virtual class meeting	Marinkovic et al., 2011 (for Thur.)

11	Speech & Language Processing I T 3/30: Asynchronous lecture <b>R 4/1: BREAK DAY</b>	WARD, CH. 8 (193-201)
12	Speech and language processing II T 4/6: Asynchronous Lecture *R 4/8: Virtual Class Meeting	WARD, CH. 12 Chai et al. 2016
13	Executive Control T 4/13: Asynchronous Lecture *R 4/15: Virtual Class Meeting	WARD, CH. 15
14	Social & Emotional Processing T 4/20: Asynchronous Lecture *R 4/22: Virtual Class Meeting	WARD CH. 16 Filmer & Monsell, 2013
<b>Finals Week</b>	<b>T 4/27: EXAM 3</b>	