

**University of Florida**  
**PSB 6087 & PSB 4934: Behavioral & Cognitive Neuroscience 1**  
**Fall 2022: Fridays, 12:50pm – 3:50pm, PSY 0151**

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Office Hours:	Thursdays: 9:30am-10:30am & Zoom if nec (Link on Canvas)		

## COURSE FUNDAMENTALS

### Course Overview

Welcome to the course! This version of “Behavioral & Cognitive Neuroscience 1” places special emphasis on the field of *cognitive neuroscience*. What is cognitive neuroscience? Cognition is a general term that we use to describe mental processes related to knowledge acquisition, and encompasses topics such as attention, perception, memory, language, emotion, decision-making, and many others. Neuroscience is a field which focuses on understanding the structure and function of the nervous system and the brain. Thus, cognitive neuroscience aims to understand how coordinated brain activity gives rise to different aspects of cognition. In order to become an effective cognitive neuroscientist, you need to master the foundations of the field and have technical expertise to conduct independent research. To that end, in this course we will not only cover foundational topics in cog neuro, but also learn how to code together in Python! By the end of the course, my goal is for you to have a firm grasp on seminal topics and methods in the field, as well as increased technical skills to enhance your capacity for conducting scientific research.

### Course Objectives

Over the course of this semester, students will:

- Understand experimental findings on topics such as hemispheric specialization, attention, memory, cognitive control, social cognition, and others
- Develop a capacity to code in Python, cultivating general coding skills that can be applied to other programming languages
- Acquire an understanding of research methods in cognitive neuroscience and the ability to critically evaluate published research

### Required Materials

- Textbook  
*Cognitive Neuroscience: The Biology of the Mind* (5<sup>th</sup> Ed.)  
 by Michael S. Gazzaniga, Richard B. Ivry, and George R. Mangun  
 You will be required to read 1 chapter of this textbook each week.
- Supplemental Readings  
 Additional readings will be uploaded to Canvas (see pp.4-5)

**Course Website:** <http://elearning.ufl.edu>, **Course Credit Hours:** 3

### Online Course-Management System

This class includes an in-person section every Friday. At this time, I do not plan to offer an online Zoom section. You can access all course materials through the course website: <https://elearning.ufl.edu/>. Important class updates and announcements will be posted online. You will be responsible for all class announcements made through Canvas.

## COURSE MATERIALS, ASSIGNMENTS AND GRADING SCALES

### Course Grades are based on the following:

Attendance	-	100 pts
Coding Exercises	-	100 pts
Exam 1	-	100 pts
Exam 2	-	100 pts
Final Exam	-	200 pts

Final letter grades in the course will be assigned according to the following percentage scale:

A	93.00-100	B+	87.00-89.99	C+	77.00-79.99	D	60.00-69.99
A-	90.00-92.99	B	83.00-86.99	C	73.00-76.99	E	00.00-59.99
		B-	80.00-82.99	C-	70.00-72.99		

Grades will be rounded to the nearest hundredth of a point and the stated letter grade cutoffs will be applied without exception. ***There is no plan to “curve” grades in this course.*** I reserve the right to adjust all students' grades up by a set value if deemed appropriate, and grades will not be adjusted down under any circumstances.

### Lecture Notes/Outlines:

Class slides (in pdf or .ppt form) will be posted on the Canvas website prior to each lecture. You should look at them ahead of time. However, they are *NOT* a substitute for attending class, nor do they contain all information covered in class. Exams will be based on what is covered both in class and what is in the textbook.

### Course Attendance:

**You are expected to attend every class, and to have a laptop computer with you. I will take attendance, and it counts towards your final grade.** Please note that you can miss ONE class period without penalty (i.e., there are 11 in-person classes; you must attend 10). If acquiring/bringing a laptop computer is going to be an issue, please let me know during the first week of class, and we will figure out a plan together. We will code in almost every class, and if you miss the in-class coding exercise or fail to finish it, you will be required to complete it by the next class period. If you miss any information due to missing class, it is your responsibility to obtain it from your fellow students. Please realize that if you miss class for any reason, it is still your responsibility to (1) complete & submit coding assignments prior to class the following week and (2) get notes, assignments, and announcements that you missed.

### Exams

There are two mid-term exams and one final exam. Tests will consist of free-response questions. Make-up exams will be conducted following UF policy (<https://catalog.ufl.edu/UGRD/academic-regulations/examination-policies-reading-days/>). **The two midterm exams will be take-home exams, but the final exam will be in person.**

### Contesting Scores

I will seriously consider any issues raised about the score of an exam or assignment. **You must submit concerns in writing (e-mail) within five school days of the score being made available to you.** Please clearly explain your reason for contesting the score. I will respond within three days of receiving the information from you.

### Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Students will be notified when the evaluation period opens, and can complete evaluations through the email

they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### **HyFlex and Video (Zoom) Recordings**

I won't be offering a Zoom section of the course, but the lecture component of our in-class sessions may be audio-visually recorded for students in the class to refer back to as study aids. Again, please note that **you must attend class in person to receive attendance credit**. Note that I will **not** be recording our discussions of articles, nor in-class coding sessions.

### **COURSE SCHEDULE**

<b>Week</b>	<b>Dates</b>	<b>Topic</b>	<b>Reading Due</b>	<b>In-class coding?</b>
1	Aug. 26	Intro + History of Cog Neuro + Why Coding Matters	Ch 1	Coding Set-up!
2	Sep. 2	Brain Structure & Function– Our BIG BRAIN REVIEW DAY!	Ch 2	NO
3	Sep. 9	Cog Neuro Methods	Ch 3 + Poldrack 2006	YES
4	Sep. 16	Hemispheric Specialization	Ch 4 + Pinto et al. 2017	YES
5	Sep. 23	Sensation & Perception + EXAM 1 ASSIGNED	Ch 5 + Freeman et al. 2013	YES
6	Sep. 30	Object Recognition + EXAM 1 DUE	Ch 6	YES
7	Oct. 7	NO CLASS – HOMECOMING		
8	Oct. 14	RECORDED VIDEO CLASS – Action	Ch 8 + Chang & Tsao 2017	NO (VIDEO CLASS)
9	Oct. 21	Attention	Ch 7 + Hommel et al. 2019	YES
10	Oct. 28	Memory + EXAM 2 ASSIGNED	Ch 9 + Rose et al. 2016	YES
11	Nov. 4	Emotion + EXAM 2 DUE	Ch 10	YES
12	Nov. 11	NO CLASS – VETERAN'S DAY		
13	Nov. 18	Language	Ch 11 + Huth et al. 2016	YES
14	Nov. 25	NO CLASS - THANKSGIVING		
15	Dec. 2	Social Cognition	Ch 13 + Parkinson et al. 2018	YES
		FINAL EXAM – In Class! (CUMULATIVE)		

### **UF POLICIES & RESOURCES**

### **Student Disabilities**

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<https://disability.ufl.edu/students/get-started/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

### **Student Misconduct**

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code ([sccr.dso.ufl.edu/process/student-conduct-code/](http://sccr.dso.ufl.edu/process/student-conduct-code/)) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### **Student Health & Well-Being**

- **U Matter, We Care:** If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit [umatter.ufl.edu/](http://umatter.ufl.edu/) to refer or report a concern and a team member will reach out to the student in distress.
- **Counseling and Wellness Center:** Visit [counseling.ufl.edu/](http://counseling.ufl.edu/) or call 352-392-1575 for information on crisis services as well as non-crisis services.
- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit [shcc.ufl.edu/](http://shcc.ufl.edu/).
- **University Police Department:** Visit [police.ufl.edu/](http://police.ufl.edu/) or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608;  
[Visit the UF Health Emergency Room and Trauma Center website.](#)

### **Academic Resources**

- **E-learning technical support:** Contact the [UF Computing Help Desk](#) at 352 392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).
- **Career Connections Center:** Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- **Teaching Center:** Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- **Student Complaints On-Campus:** [Visit the Student Honor Code and Student Conduct Code webpage for more information.](#)
- **On-Line Students Complaints:** [View the Distance Learning Student Complaint Process.](#)

**COVID-19:** In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit one.uf for screening / testing and vaccination opportunities.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

### **Class Readings**

#### **Week 3**

Poldrack, R. A. (2006). Can cognitive processes be inferred from neuroimaging data? *Trends in Cognitive Sciences*, 10(2), 59–63. <https://doi.org/10.1016/j.tics.2005.12.004>

#### **Week 4**

Pinto, Y., Neville, D. A., Otten, M., Corballis, P. M., Lamme, V. A. F., de Haan, E. H. F., Foschi, N., & Fabri, M. (2017). Split brain: divided perception but undivided consciousness. *Brain: A Journal of Neurology*, 140(5), 1231–1237. <https://doi.org/10.1093/brain/aww358>

#### **Week 5**

Freeman, J., Ziemba, C. M., Heeger, D. J., Simoncelli, E. P., & Movshon, J. A. (2013). A functional and perceptual signature of the second visual area in primates. *Nature Neuroscience*, 16(7), 974–981. <https://doi.org/10.1038/nn.3402>

#### **Week 8**

Chang, L., & Tsao, D. Y. (2017). The Code for Facial Identity in the Primate Brain. *Cell*, 169(6), 1013–1028.e14. <https://doi.org/10.1016/j.cell.2017.05.011>

#### **Week 9**

Hommel, B., Chapman, C. S., Cisek, P., Neyedli, H. F., Song, J.-H., & Welsh, T. N. (2019). No one knows what attention is. *Attention, Perception & Psychophysics*, 81(7), 2288–2303. <https://doi.org/10.3758/s13414-019-01846-w>

#### **Week 10**

Rose, N. S., LaRocque, J. J., Riggall, A. C., Gosseries, O., Starrett, M. J., Meyering, E. E., & Postle, B. R. (2016). Reactivation of latent working memories with transcranial magnetic stimulation. *Science*, 354(6316), 1136–1139. <https://doi.org/10.1126/science.aah7011>

#### **Week 13**

Huth, A. G., de Heer, W. A., Griffiths, T. L., Theunissen, F. E., & Gallant, J. L. (2016). Natural speech reveals the semantic maps that tile human cerebral cortex. *Nature*, 532(7600), 453–458. <https://doi.org/10.1038/nature17637>

#### **Week 15**

Parkinson, C., Kleinbaum, A. M., & Wheatley, T. (2018). Similar neural responses predict friendship. *Nature Communications*, 9(1), 332. <https://doi.org/10.1038/s41467-017-02722-7>