

# COGS 60N/PSYCH 60N: Neurobiology of Cognition

[Formerly Psych 89 – Neurobiology of Cognition]

## Course Syllabus

### INSTRUCTOR:

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Office hours/Zoom discussion: Thursdays 3:00-4:00 pm and by appointment

Office hours location: Zoom discussion – see Canvas for access info

### COURSE DESCRIPTION:

One of the greatest mysteries in neuroscience and psychology is how electrical activity of large networks of neurons within the brain gives rise to our highly complex human cognition, perception, and emotion – phenomena that we still cannot perfectly duplicate with our most sophisticated computers. Scientific investigations into the inner workings of the brain have begun to unravel pieces of this mystery, with exciting new findings emerging over the last several decades concerning the neural underpinnings of cognitive functions such as learning and memory, sensation and perception, arousal and attention, decision-making, and motor planning, as well as the influence of emotion and motivation on cognition. This course is an introduction to such neurobiological components of human cognition. Weekly topics will include discussion of the cortical structures and functions that underlie these behaviors. Emphasis will be placed on the development and organization of the healthy brain.

### RECOMMENDED PREREQUISITES:

None

### COURSE CONTENT:

- Unit 1: Introduction to Neuroanatomy
- Unit 2: Structure and Function of Brain Cells
- Unit 3: Neural Development
- Unit 4: Brain Measurements
- Unit 5: Arousal and Sleep
- Unit 6: Learning and Memory
- Unit 7: Sensation and Motor Control
- Unit 8: Hormones, Emotions, and Behavior



❖ *Please see the course webpages on Canvas for complete syllabus information and course calendar.*

## COURSE FORMAT:

### Overview:

This course has been designed to be an **asynchronous online format**. This is a lecture-based course that I have set up so that students can participate according to their own schedules (i.e., it can be taken entirely asynchronously), but I still provide weekly optional synchronous interactions through Zoom discussions. Each week, students will be assigned to watch a set of recorded lecture videos with basic online review quizzes to complete after each lecture to test what they have learned in the videos. Students can also participate in activities (e.g., reading papers, viewing patient videos) on the Canvas Discussion forum related to that week's topics. These online activities will be paired with a one-hour Zoom meeting with me on Thursdays for discussion about that week's lecture topics. There will also be one closed-book/closed-notes midterm exam and one closed-book/closed-notes final exam. Please see below for additional details.

### Class Lectures:

All lecture materials for the course have been posted on the Canvas course page. Lectures have been pre-recorded, and the lecture video links are posted on the related Canvas page for each unit. Up to ~3 hours of lecture (our normal class time) will be assigned each week for viewing when students have time and adequate internet access. Lecture videos can be watched in Canvas, YuJa, or downloaded for viewing offline.

Lecture slides for each unit are posted as both PDF and PPTX documents on Canvas. A glossary of key terms for each lecture is also posted with the lectures. Additional notes to help with slide content are included for many of the slides. These notes may provide useful background information, related details, and/or fun facts. *Exam questions will NOT be drawn from the notes section; key info will be duplicated in the glossary of terms.* Slides are designed to be an aid and not the complete source of information on the lectures; viewing the lecture videos and attending/viewing Zoom discussions are strongly recommended.

### Optional Synchronous Zoom Discussions with Dr. Brewer:

I will hold optional, one-hour discussion sessions about the lecture content each week on Thursdays that will be live over Zoom. Participation in the Zoom discussions is not required for the course. These discussions will also be recorded and posted on Canvas with the associated lecture videos for those who aren't able to participate in the discussions directly. The Zoom link to access our discussions will be posted on Canvas once the quarter begins.

### Reading List:

There is **NO required textbook** for the course. Optional readings that cover associated topics will be posted with each lecture on Canvas for those who may want more in depth reading on a particular subject. The course content is composed of the lecture slides and notes and a glossary of terms associated with each lecture.

### **Office hours:**

Dr. Brewer will hold office hours via Zoom on Thursdays 3:00-4:00 pm. Our TA will be holding weekly office hours via Zoom and in person. Please see the Course Staff and Office Hours page on the Canvas course space for all office hours and contact information.

## **COURSE REQUIREMENTS AND GRADING:**

### **Course Grading Overview:**

Grades will be determined by lecture-video review quizzes (15%), midterm exam (40%), and final exam (45%). Up to 4% extra credit for your overall course grade is also available.

No letter grades are assigned to scores until I calculate a final course percentage for each student. Your scores on each assignment are weighted by what percentage that assignment contributed to your final grade. Also note that Canvas does not yet properly handle some extra credit calculations, so I typically calculate final grades outside of Canvas in Excel. I may consider a curve/scaled grading depending on how students perform on the exams that quarter.

### **Lecture-Video-Review Quizzes (15%):**

To help you track your understanding of the lecture videos and highlight key learning objectives, each lecture video will have an associated short lecture-video-review quiz. These quizzes will be posted on Canvas, are open-notes/open-book, and will be graded solely on completion. Each quiz will consist of a few short-answer/short-essay questions about key parts of the associated lecture. The correct answers will be visible for you to review after your submit your quiz. One quiz score will be automatically dropped, which means that you can skip one lecture-video quiz without penalty.

### **Midterm (40%):**

**There will be one midterm exam** that will cover course material presented in the lectures in the weeks prior to the midterm. The exam will consist of a mix of true/false, matching and multiple choice questions and will account for 40% of your total course grade. Check the Canvas Assignments section for specific lectures/slides that will be covered. The dates during which the midterm will be available online are posted on Canvas. Exams will be monitored online using the Respondus Lockdown-Browser & Monitoring system and will be closed-notes/closed-book. A practice quiz is available to test out your computer set up with Respondus. If you have problems with Respondus or you do not have access to a webcam or appropriate computer hardware, please talk to Dr. Brewer to work out other options. A makeup midterm will be considered for medical and personal emergencies; please talk to me (Dr. Brewer) BEFORE the exam about the possibility of taking a makeup.

### **Final Examination (45%):**

**The final examination is NOT cumulative**, but is mandatory (i.e., cannot be dropped), and will account for 45% of your final course grade. The exam will cover course material presented in the lectures in the weeks following the midterm and will have the same format and requirements as the

midterm. Check the Canvas Assignments section for the specific lectures/slides that will be covered. A makeup final exam will be considered for medical and personal emergencies; please talk to me (Dr. Brewer) BEFORE the exam about the possibility of taking a makeup or taking an incomplete in the course.

**Extra Credit (4%):**

Extra credit is voluntary, but may earn you up to **4 percentage points of extra credit** that will be applied to your overall course grade. There are two options for extra credit: a four-page **research paper** OR 4 hours of **experiments in the Social Sciences Human Subjects Lab** (Sona Systems). You may **mix and match** points from both options to reach the full 4% of extra credit.

- **OPTION 1: RESEARCH PAPER**

One option for extra credit this quarter is a well-focused, up-to-4-page, double-spaced paper on a topic related to this course, which will earn up to 4 percentage points of extra credit. You will receive 1 extra credit percent for each page of the research paper, up to 4 pages. For example, if you only complete 2 credits of Sona research, you may pair that with a 2-page research paper to receive the full 4 extra credit percentage points.

The paper can be a review of recent research on a relevant issue, a proposal for a research project, or a new theoretical proposal. Other paper ideas may also be possible with permission from me (Dr. Brewer). You may choose from the optional papers posted on Canvas for each lecture, or you may find your own paper(s) related to anything we covered in Neurobiology of Cognition, including patient examples or disorders. For this assignment, most students have written a paper discussing 1-3 published scientific articles. Recommended sites for finding published articles include PubMed (<https://pubmed.ncbi.nlm.nih.gov/>), Google Scholar (<https://scholar.google.com/>), and ResearchGate (<https://www.researchgate.net/>), a free-to-join scientific community. Please include a reference section for any papers discussed; however, the bibliography does not need to be extensive (i.e., it would be fine to include 3 references for just the 3 cited papers on which your paper is based). Maximum margin size is 1 inch, and maximum font size is 12 pt. The paper must be composed of up to 4 pages of text and be double-spaced. References may be listed on an additional page.

**Papers are due at the end of the quarter on the same due date as the final exam;** the exact due date will be posted on Canvas by the start of the quarter. Late papers will not be accepted. Please submit your papers on Canvas, and note that paper submissions will be run through Turnitin. I will grade your papers and post your scores as soon as possible after the final exam (typically 1-3 days).

- **OPTION 2: RESEARCH THROUGH SONA SYSTEMS HUMAN SUBJECTS LAB POOL**

You may also earn extra credit by participating in experimental research through the Social Ecology Human Subjects Lab. Participation in research is completely voluntary; there are alternative ways to accrue extra credit for this course. **It is your responsibility to read through the policies on the HS Lab Student Participation Page and note the deadlines listed on the SONA login page.** More information and participation can be accessed at <https://uci.sona-systems.com/>.

To participate in research, login to SONA, and view the list of available studies. Studies are listed randomly and change throughout the quarter as they become available. If you agree to participate in an experiment, you form a contract with the researcher to be present at the assigned time and designated place. **If you accrue 2 unexcused no-shows your account will be limited and you will not be able to sign up for additional studies for the remainder of the quarter.** You will earn 1 SONA credit for each hour of research participation. For example, 1 hour of research participation = 1 SONA credit. You may assign a total of 4 SONA credits to this course. You must allocate each credit earned to the course(s) of your choice. This course is listed in SONA as something like 'SS24\_Cogs 60N\_Psych 60N (NeurobioCognition)\_Brewer.' It is your responsibility to check your credit assignments before the stated deadlines on the SONA login page, as accounts will be disabled and no changes, extensions, or exceptions will be made. No credit will be given if a student does not properly allocate his or her credit. For questions about the HS Lab or SONA please contact [sereslab@uci.edu](mailto:sereslab@uci.edu).

Visit the Human Subjects Lab website at <https://sites.uci.edu/hslab/> for more details. Participation is available through links on that website or directly on the UCI Sona Systems page (<https://uci.sona-systems.com/>). Please note that available research units may fill up over the quarter, so sign up as soon as you can if you are planning to do this option. Sona access closes just before finals week, so be sure to **finish your units and assign your credits to Neurobiology of Cognition BEFORE the deadline.**

During finals week (*not* before), I will have access to the submitted credits and will post your scores on Canvas under Assignments (*Extra Credit: Sona Research*). Please note that the maximum number of credits assigned to extra credit will be 4 points; if you assign more Sona credits than that to this class, I will reduce the final score down to 4. Sona usually offers 0.5 credits for signing up. This 0.5 credit will count towards your 4 total credits. See below for the policy statement for the human-subjects lab and subject compliance.

#### POLICY STATEMENT FOR THE HUMAN-SUBJECTS LAB AND SUBJECT COMPLIANCE

When signing up to participate in research through Sona Systems, as a way to earn extra course credit, please be aware of the Human Subject Lab's policy:

1. Be sure that you meet the eligibility criteria for the research study before signing up.
2. Arrive on time since many studies begin exactly at the scheduled time.
3. If you need to cancel your appointment, do so no later than one hour before your scheduled appointment through the Sona Systems website and by calling the researcher for the study or the lab manager.

Students who do not comply with the above policy statements will not earn the extra credit points.

Moreover, students who fail to follow the above policies twice during a quarter will not be permitted to use the Human Subjects Lab as a means to earn extra course credit for the remainder of that quarter.

Students may still earn extra course credit by completing the alternative option as described in the

course syllabus. The alternative option must be comparable to participation in research through the Human Subjects Lab in terms of time, effort, and educational benefit.

## **COURSE EVALUATIONS**

Please complete the online course evaluations available during the middle of the quarter and the last week of the course. Your feedback is very useful for improving the course and for my performance evaluations and is much appreciated.

## **ACADEMIC HONESTY POLICY**

Academic dishonesty is unacceptable and will not be tolerated. Academic dishonesty includes cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities. Students who are guilty of academic dishonesty will automatically receive a grade of F and will not be permitted to retake the course. UCI's policies on academic dishonesty can be found here:

<https://aisc.uci.edu/students/academic-integrity/index.php>

## **CAMPUS SUPPORT SERVICES**

- Disability Services: <https://dsc.uci.edu/>
- Learning and Academic Resource Center: <https://larc.uci.edu/all-services/>
- Counseling and Emergency Services: <https://counseling.uci.edu/>

\*Please see the Canvas course web space for additional student resources.

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