Course Syllabus

Psychology 449/549
Cognitive Neuroscience

Updated as of 1/6/23

Course Information:

Psychology 449/549 Cognitive Neuroscience (25637; 26079), Tykeson Hall 32

Instructor: Prof. Ben Hutchinson (he/him; can address by 'Dr. Hutchinson,' 'Prof. Hutchinson,' or 'Ben')
Contact: Via Canvas or bhutch@uoregon.edu (mailto: bhutch@uoregon.edu)
Office Hours: After class on Tuesdays or by appointment.
Office Hours Location: Find me at the end of class and we will find a suitable location.

Teaching Assistant: Peeta Li
Contact: peetal@uoregon.edu (mailto: peetal@uoregon.edu)
Office Hours: By appointment

Course Overview:

The human brain is argued to be the most complex structure in the known universe. Despite exclusively using its computational abilities for eons, humans have only recently gained meaningful traction on understanding how a 3 pound wad of nerve cells in our heads gives rise to all our thoughts, memories, actions, hopes, and fears. At the core of this progress is the parallel ascent of cognitive psychology, enabling insight into the component processes underlying our mental operations, and contemporary neuroscience, enabling precise measurement and manipulation of the biology underpinning these operations. This course provides an introduction into the field of study at the confluence of these two areas: cognitive neuroscience.

In this course, we will learn about the core tools, techniques, and concepts employed in cognitive neuroscience. The content will be organized by traditional cognitive domains (e.g., perception,
memory, language), but an effort will be made to highlight how intertwined all mental operations are with one another in the service of complex thought and behavior.

Course Material and Structure:

All required course content will be available through the course Canvas webpage in the Modules (https://canvas.uoregon.edu/courses/216898/modules) section. This includes lecture slides, recordings, readings/watching assignments, exercises, and exams. Course material (excluding lecture recordings) will be made available before the start of class each Tuesday and Thursday.

There is no required textbook although Cognitive Neuroscience 5th edition (Gazzaniga, Ivry, Mangun) is recommended. Consider this a recommendation mostly for those who are particularly interested in learning more as all tested content will be provided through the readings on Canvas.

Learning Outcomes:

By the end of this course you should be able to:
• Identify important theories, research findings, and methodological approaches in cognitive neuroscience
• Critically examine research in 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. It is estimated that you will spend 3 hours attending lecture each week. The other 9 hours will be spent completing reading/watching assignments, completing exercises, studying for exams, and working on your final paper. Most weeks you should plan to spend about 6 hours on non-lecture, class-related activities. Your workload will increase when you are studying for the midterms, and when you are working on your final paper.

Course Requirements:

Reading/Watching Assignments

Each lecture/module will be accompanied by relevant reading material and/or online video/interactive content. If you have difficulty accessing any material, please reach out as soon as possible. It is expected that you will read/watch all the provided content unless it is otherwise stated.
Exercises

Each module will often contain short 'exercises' designed to assess comprehension of the reading/watching assignments. The format of these exercises will vary (e.g., multiple choice, short answer, matching) and you are allowed using course material but you cannot consult with classmates and/or the broader internet. Unless otherwise stated, exercises will be available to take whenever a module is made available and be due by Monday the following week. Without prior arrangements, late exercises will be penalized 1 point per day late (out of 5 total points) down to a total of 2 points possible.

Exams

There will be three midterms and no final exam. Although subject to change, each midterm will be online (not in person), open note (although you cannot consult classmates or the wider internet), and composed of multiple-choice and short-answer questions. Exam questions will be based on material presented in class and material from the reading/watching assignments, and will require you to go beyond memorization to apply, analyze, and synthesize information. Exams will be non-cumulative (they will only cover new course content since the last exam), but will presuppose general knowledge covered early in the course (e.g. knowing different brain areas and basic methodology). Unless otherwise stated, exams will be available starting at the beginning of regularly schedule class time until 11:59pm the same evening. Once you begin taking the exam you will have 80 minutes to complete it. Thus, although you flexibility in terms of when in the day to take the exam, you should have the 80 minutes of class time already set aside.

Final Paper

The final paper will involve selecting a neuropsychological condition covered in course content or, with instructor permission, from the literature more broadly. After researching the condition, you will then be responsible for writing a 5 to 7 page (double spaced) paper about it. The paper will need to accurately summarize the key features of the condition along with typical symptoms and treatments, describe in detail the known neurological basis of the condition, and then discuss how understanding of the condition informs our understanding of how the healthy brain functions. I will provide more detail about this assignment in a separate descriptive document. The final paper will be due via Canvas on March 20th by 11:59pm. Late assignments without prior arrangements will be penalized one letter grade per day late, in fairness to those who submit on time.

Grading:

Final grades in this course will be determined by the following:
• Exercises: 20%
• Midterms: 60% (20% each)
• Final Paper: 20%
Grades will be distributed as follows:

- A: 93-100%
- B+: 87-89%
- C+: 77-79%
- D+: 67-69%
- A-: 90-92%
- B: 83-86%
- C: 73-76%
- D: 60-66%
- 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/](http://psychology.uoregon.edu/courses/department-grading-standards/).

In extreme, unanticipated circumstances, you may be unable to participate in multiple weeks of this course. If you believe that are in this situation at any point in the course, you are encouraged to reach out to me as well as consult the Withdrawal and Grade Change dates and processes [https://registrar.uoregon.edu/calendars/academic](https://registrar.uoregon.edu/calendars/academic). In some cases, the best option is for a student to withdraw or change their grading option while they manage their situation. See Academic Advising’s Registration Decisions page [https://advising.uoregon.edu/registration-decisions](https://advising.uoregon.edu/registration-decisions) on options in terms of withdrawal and grade changes. Please note that students also have petition options after the term if they were unable to make changes during the term due to their situation: [Student Petitions](https://advising.uoregon.edu/student-petitions).

Class and University Policies:

**Academic Integrity**

All work submitted in this course must be your own. For exams and exercises, you are allowed to consult course material, but you CANNOT consult others and/or the wider internet. 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 about academic misconduct, see the University Student Conduct Code at [http://dos.uoregon.edu/conduct](http://dos.uoregon.edu/conduct).

For written assignments, 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! Any use of AI-generated text will also be considered plagiarism. The UO library website also has a helpful page on avoiding plagiarism: [http://researchguides.uoregon.edu/citing-plagiarism](http://researchguides.uoregon.edu/citing-plagiarism).

**Accessible Education Center (AEC)**

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, 541-346-1155) send a letter verifying the type of accommodation.
that is appropriate. For a list of resources provided by the Accessible Education Center, please see http://aec.uoregon.edu (http://aec.uoregon.edu)

**Attendance, Accommodations, and Absences**

I encourage (although do not require) attending class as exams will cover material which has been presented in lectures and it is the primary way that we'll get to interact with each other. I intend to broadcast/record lectures via Zoom and will make every reasonable effort to do so, but cannot guarantee that they will be available online for every lecture. So, if you're unable to make it to class and a recording is not available, please get in touch with a classmate to get their notes. If you anticipate needing to miss class for a longer period of time (e.g. due to quarantining), please reach out to me so that we can discuss options.

If class is canceled due to an emergency or inclement weather, please monitor your email/canvas for any announcements that will provide more information. Please note that although there is not class scheduled on Thursday in Week 10, it might be used to reschedule a previously cancelled class, so you should keep that time set aside.

**Classroom Behaviors**

All classes at the University of Oregon welcome and respect diverse experiences, perspectives, and approaches. What is not welcome are behaviors or contributions that undermine, demean, or marginalize others based on race, ethnicity, gender, sex, age, sexual orientation, religion, ability, or socioeconomic status. We will value differences and communicate disagreements with respect.

**Mandatory Reporter Status**

I am an assisting employee. For information about my reporting obligations as an employee, please see Employee Reporting Obligations (https://investigations.uoregon.edu/employee-responsibilities#employee-obligations) on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing sex or gender-based discrimination, harassment or violence should call the 24-7 hotline 541-346-SAFE [7244] or visit safe.uoregon.edu (https://safe.uoregon.edu/) for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office at 541-346-3216 or the non-confidential Title IX Coordinator/OICRC at 541-346-3123. Additional resources are available at UO’s How to Get Support webpage (https://investigations.uoregon.edu/how-get-support). I am also a mandatory reporter of child abuse. Please find more information at Mandatory Reporting of Child Abuse and Neglect (https://hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect).

**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 contact me as soon as possible to make any necessary special
Course Schedule:

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>January 10</td>
<td>Introduction and History</td>
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<td>January 12</td>
<td>Methods 1: The Brain, Neurons, and Coding</td>
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<td>2</td>
<td>January 17</td>
<td>Methods 2: Neuropsychology and Neuroimaging</td>
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<td>January 19</td>
<td>Sensation and Perception 1: Sensation and Low-Level Perception</td>
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<td>3</td>
<td>January 24</td>
<td>Sensation and Perception 2: What and Where Pathways</td>
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<td>January 26</td>
<td>Attention</td>
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<td>4</td>
<td>January 31</td>
<td><strong>Midterm 1</strong></td>
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<td>February 2</td>
<td>Working Memory</td>
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<td>5</td>
<td>February 7</td>
<td>Cognitive Control</td>
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<td>February 9</td>
<td>Episodic Memory</td>
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<td>6</td>
<td>February 14</td>
<td>Semantic Memory and Priming</td>
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<td>February 16</td>
<td>Learning</td>
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<td>7</td>
<td><strong>February 21</strong></td>
<td><strong>Midterm 2</strong></td>
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<td>February 23</td>
<td>Language</td>
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<td>8</td>
<td>February 28</td>
<td>Emotion</td>
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<td>March 2</td>
<td>Social Cognition</td>
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<td>9</td>
<td>March 7</td>
<td>Comparative Cognitive Neuroscience</td>
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<td>March 9</td>
<td>Hemispheric Specialization and Consciousness</td>
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<td>10</td>
<td><strong>March 14</strong></td>
<td><strong>Midterm 3</strong></td>
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<td>March 16</td>
<td>No Class (makeup date if needed)</td>
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<tr>
<td></td>
<td><strong>Finals</strong></td>
<td>Final Paper due at 11:59pm</td>
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arrangements.