Course Syllabus

Psychology 449/549 Cognitive Neuroscience

Course Information:

Psychology 449/549 Cognitive Neuroscience (34847; 34857)

Instructor: Prof. Ben Hutchinson (he/him; can address by 'Dr. Hutchinson,' 'Prof. Hutchinson,' or 'Ben')
Contact: Via Canvas or bhutch@uoregon.edu
Office Hours: See Live Chats section below and by appointment.
Online Office: https://canvas.uoregon.edu/courses/181521/external_tools/1449

Teaching Assistant: Nathan Young
Contact: nyoung5@uoregon.edu
Office Hours: By appointment

Teaching Assistant: Yufei Zhao
Contact: yzhao17@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 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 section. This includes lectures, readings/watching assignments, exercises, and exams. Course material will be made available in line with the pre-existing class schedule (i.e., each lecture and the corresponding content will be available by 10:15am each Tuesday or Thursday). In order to maximize flexibility, course content is 'asynchronous' meaning that it can be viewed at any time after it has been posted. That being said, the three midterms must be completed by certain dates/times and require having completed course content ahead of time, so be sure to plan accordingly!

There is no required textbook although Cognitive Neuroscience 5th edition (Gazzaniga, Ivry, Mangun) is recommended. Given access to the textbook might be difficult at best, consider this a very soft recommendation for those who are particularly interested in learning more.

All other course content will be made available through Canvas or the relevant link will be provided.

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 viewing lecture content 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. Given current circumstances, it is understandable if other matters make it so that it is difficult to reliably put in the same amount of time. Please do reach out
matters make it so that it is difficult to reliably put in the same amount of time. Please do reach out if you feel school work is consuming too much time that is better spent on more urgent matters for whatever reason.

**Course Requirements:**

**Live Chats**

During our regularly scheduled class meeting times (T/R 10:15 am to 11:45 am), I will hold optional Live Chats using Zoom (see [Zoom Meetings](#) link in sidebar). These Live Chats will give you the chance to drop by and ask questions about lecture content or related readings. For example, if you have questions after watching one of the lectures, this will be a great way to get answers. They will be public (not 1 on 1), and will therefore function like an in-class question and answer session. While these are not required and your attendance will not be taken, they will give us an opportunity for informal discussion. If there is anything you need to discuss that is not compatible from the above format, please reach out to me or the TA to schedule a 1 on 1 Zoom meeting.

**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).

**Exams**

There will be three midterms and no final exam. Each midterm will be 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 for a two day period, although once you begin taking the exam you will have 80 minutes to complete it. That is, the midterms will be available starting at the class time on the dates listed below and be accessible up to 48 hrs from that point. Make-up and/or retaking
the dates listed below and be accessible up to 48 hrs from that point. Make-up and/or retaking exams are not permitted except in documented emergency situations.

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 4 to 6 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 Thursday, June 10th 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+: 99-100%
- B+: 87-89%
- C+: 77-79%
- D+: 67-69%
- A: 93-98%
- B: 83-86%
- C: 73-76%
- D: 60-66%
- A-: 90-92%
- 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/)

Class 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! 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)

**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 arrangements.

**Course Schedule:**

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>March 30</td>
<td>Introduction and History</td>
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<tr>
<td>April 1</td>
<td>Methods 1: The Brain, Neurons, and Coding</td>
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<td>April 6</td>
<td>Methods 2: Neuropsychology and Neuroimaging</td>
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<td>April 8</td>
<td>Sensation and Perception 1: Sensation and Low-Level Perception</td>
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<td>April 13</td>
<td>Sensation and Perception 2: What and Where Pathways</td>
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<td>April 15</td>
<td>Attention</td>
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<td><strong>April 20</strong></td>
<td><strong>Midterm 1</strong></td>
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<td>April 22</td>
<td>Working Memory</td>
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<td>April 27</td>
<td>Cognitive Control</td>
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<td>April 29</td>
<td>Episodic Memory</td>
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<td>May 4</td>
<td>Semantic Memory and Priming</td>
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<td>May 6</td>
<td>Learning</td>
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<td><strong>May 11</strong></td>
<td><strong>Midterm 2</strong></td>
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<td>May 13</td>
<td>Language</td>
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<td>May 18</td>
<td>Emotion</td>
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<td>May 20</td>
<td>Social Cognition</td>
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<td>May 25</td>
<td>Guest Lecture: Dr. Mason Price</td>
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<td>May 27</td>
<td>Comparative Cognitive Neuroscience</td>
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<td>June 1</td>
<td>Hemispheric Specialization and Consciousness</td>
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<td><strong>June 3</strong></td>
<td><strong>Midterm 3</strong></td>
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<td><strong>June 10</strong></td>
<td><strong>Final Paper due at 11:59pm</strong></td>
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