I. Course & Instructor

Credit Hours: 4
Prerequisites: Graduate Standing.
Meeting Times: TBD, 1 hour 50 minutes, twice/week including lecture, seminar, discussion, and exams.

Course Instructor: Anita Cservenka, Ph.D.
E-mail: anita.cservenka@oregonstate.edu
Phone: 541-737-1366
Office hours: Reed Lodge, Room 226, TBD
Please email in advance for an appointment time other than normal office hours.

II. Course Resources

A. Required text
- Other required readings will be original research articles or review articles on each of the topics covered. These readings will be posted on Canvas. Further, students will be required to read the articles assigned for research article summaries/presentations.

B. Canvas
Course materials, including readings and PowerPoint presentations of lectures, will be posted on Canvas for this course.

III. Course Overview & Objectives

A. Course Description
This graduate level core course in behavioral neuroscience will focus on integrating theory and empirical research findings to prepare students for evaluation and critique of research as it relates to the neurobiological basis of behavior. The course will review brain structure and function at both a gross and cellular level. Topics will include, but are not limited to neuroanatomy, neural transmission, learning and memory, executive functioning, emotional processing, reward and motivation, neurodevelopment, aging, as well as psychiatric conditions. The course will incorporate the study of research methods used in animal models and humans to study the biological basis of behavior.

B. Course Structure
The first half of the course will include lecture presentations by the instructor, while the second half will include a presentation on the week’s topic and a student-led seminar presentation of a research article on that topic. All non-presenting students will be expected to read the research article for each week and provide a summary/critique, as well as come prepared to class for a group discussion following the student presentation. In the event that not enough students are enrolled in the course to fill all presentation slots, the course instructor will lead the presentation, and students will still be expected to actively participate in the discussion of the article following the presentation. Depending on course enrollment, some weeks will require two presenters to sign up for a topic. In addition, there will be a midterm and final exam to evaluate the lecture material students mastered during the course.

C. Classroom Rules
* Please Be Respectful to Others. If someone is talking, please don’t interrupt them. Everyone should have their turn for sharing their questions, comments, or thoughts.
* Please Be on Time. It is very disruptive to others if you are late to class, and leads to lost time due to distractions.
* Please Complete Your Work with Integrity. Honesty in your work is expected at all times. You’re only cheating yourself if you do otherwise, and dishonest work will have consequences.
* Please Be Ready to Participate. Active engagement is important to gaining the most out of this course. With that said, there may not always be time for everyone’s questions. If there are unanswered questions, these can always be addressed through email or office hour appointments.
* Please Keep Cell Phones in Backpacks/Bags/Purses.

D. Learning Outcomes
By the end of this course, students should:
- Identify brain structures and functions as they relate to both typical behavior and psychiatric disorders.
- Demonstrate knowledge of human neuroimaging research methods used to study behavioral neuroscience and discuss the value of preclinical research using animal models.
- Be able to summarize and critically evaluate biopsychological research articles, commenting on limitations, and future directions for research in written assignments.
- Demonstrate the ability to orally present behavioral neuroscience research from peer-reviewed journal articles.
- Be able to verbally critique and evaluate behavioral neuroscience research articles during in-class discussion.

IV. Course Requirements
A point system will be used to calculate grades. Points will be awarded for exams, your presentation, and your research article summaries/critiques. The total possible points for each of these components are noted below. Total points obtained will be added and divided by the total possible points.

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<th>Letter grade</th>
<th>Percent range</th>
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<th>Letter grade</th>
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<td>C+</td>
<td>79-77</td>
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<tr>
<td>A-</td>
<td>92-90</td>
<td>371-360</td>
<td>C</td>
<td>76-73</td>
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<tr>
<td>B+</td>
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1. Exams: 200 points (50%)

A. Midterm: 100 (25%) (first half of course)
   a. Multiple choice, short answer/essay

B. Final Exam: 100 (25%) (second half of course, not cumulative)
   a. Multiple choice, short answer/essay

2. Research Article Summaries/Critiques: 120 points (30%)

Students will sign up to summarize and critique a research article on weeks 7-11 of the course. Every student will complete the research article summary assignment for each of the 5 weeks of presentations, except on the day they are presenting. Thus, each student will be submitting 4 research article summary/critiques (30 points each). The summary should be 2 pages, double spaced, printed in 11 size Arial or Times New Roman font, with 1 inch margins (please keep it to 2 pages). Your summary must do four things:
1. state the objective of the article (i.e., Why did the author(s) write the article? What questions were they trying to answer?);
2. describe the techniques that were used;
3. summarize the main points or findings;
4. **evaluate/critique** the article using your own critical thinking discussing the limitations of the article and future directions you would take with the study.

Research article summaries/critiques will be due by 4pm the day before class in order to allow time for the presentation leader to read your evaluations/critique and integrate them into the discussion for their presentation. You will upload these to the Discussion Board on Canvas. On days that there are two presenters, you will be completing two research article summaries, worth 15 points each.

3. **Student Research Article Presentation: 80 points (20%)**

Students will sign-up to present a research article on the topic of their choice during weeks 7-11 of the course. The articles will be posted on Canvas at the beginning of the course for students to make their selection. Each student will be responsible for creating a Powerpoint presentation that presents the article, including: Introduction/Background, Methods, Results, and Discussion/Conclusions. Each presentation will be followed by an in-class group discussion on the strengths and weaknesses of the article. There is no slide limit, but keep in mind that presentations should be no longer than 45 minutes to leave time for a 15-20 minute discussion. Depending on course enrollment, some weeks will include two presenters for a topic instead of one.

V. **Course Schedule**

* Required Reading should be completed by the day of the class it is listed for. These readings will be review papers/original research articles. Readings will be uploaded as pdf documents. PowerPoints of each lecture will be posted on Canvas prior to class.

| Week 1: Syllabus, Introductions, Genetic and Environmental Influences on Behavior | Required Reading Due: 
Syllabus, Physiology of Behavior: Chapter 1 
Isles, 2015, *Genes, Brain, and Behavior* |
|---|---|
| Week 2: Neuroanatomy | Required Reading Due: 
Physiology of Behavior: Chapter 3 
NeuroID Self-Quiz |
| Week 3: Electrical and Chemical Neural Transmission | Required Reading Due: 
Physiology of Behavior: Chapter 2, Chapter 4 (pages 96-117) |
| Week 4: Research Methods in Behavioral Neuroscience | Required Reading Due: 
Physiology of Behavior: Chapter 5 
Symms et al., 2004, *Journal of Neurology, Neurosurgery, and Psychiatry* |
| Week 5: Reward and Motivation | Required Reading Due: 
Arias-Carrión et al., 2010, *International Archives of Medicine* 
Salamone & Correa, 2012, *Neuron* |
| Week 6: Emotion, Stress, and Hormones | Required Reading Due: 
Physiology of Behavior: Chapter 11, Chapter 17 (pages 552-564), Chapter 10 (pages 304-313) 
MIDTERM EXAM |
| Week 7: Executive Functioning | Required Reading Due: 
Diamond, 2013, *Annual Review of Psychology* 
Student Presentation(s) 
Research Article Summary Due: Breukelaar et al., 2016, *Human Brain Mapping* |
| Week 8: Brain Development and Neurodevelopmental Disorders | Required Reading Due: Physiology of Behavior, Chapter 17 (pages 578-587)  
Student Presentation(s)  
Research Article Summary Due: von dem Hagen et al., 2014, Cerebral Cortex |
|---|---|
| Week 9: Psychopharmacology And Substance Use Disorders | Required Reading Due: Physiology of Behavior, Chapter 17; Silveri et al., 2016, Neuroscience & Biobehavioral Reviews  
Student Presentation(s)  
Research Article Summary Due: Martz et al., 2016, JAMA Psychiatry |
| Week 10: Depression and Anxiety Disorders | Required Reading Due: Physiology of Behavior, Chapter 17 (pages 564-577); Heller, 2016, Frontiers in Systems Neuroscience  
Student Presentation(s)  
Research Article Summary Due: Kong et al., 2013, Journal of Psychiatry and Neuroscience |
| Week 11: Learning, Memory, and Aging | Required Reading Due: Physiology of Behavior, Chapter 13, Chapter 15 (pages 500-515)  
Student Presentation(s)  
Research Article Summary Due: Thompson et al., 2013, Journal of Neuroscience |
| Finals Week: | FINAL EXAM |

**VI. Course & University Policies**

A. **Academic Integrity.**  
Cheating on tests or plagiarizing written work will not be tolerated and will lead to an automatic failing grade for the assignment and perhaps the entire course. If you have any questions about what constitutes plagiarism or other forms of academic dishonesty, please check Oregon State University’s Student Conduct Code (http://studentlife.oregonstate.edu/studentconduct/offenses-0) or see me for clarification.

B. **Accommodations.**  
Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

C. **Exam Attendance.**  
An exam may only be missed in the case of serious illness, outstanding emergency situations, or participation in a University sponsored activity such as a game or tournament. If such an event should occur, you MUST contact me via phone (541-737-1366) or email (anita.cservenka@oregonstate.edu) BEFORE the exam in order to qualify for a make-up; documentation of the reason for the absence is also recommended. If you do not contact me before the time of the exam, a grade of “0” will be given for that test and you will not be allowed to make it up.

D. **Late Writing Assignments.**  
Late article summaries will be accepted up to two days (not class periods, and including weekends) after the due date, with the following penalty.  
- One day = 5% deduction  
- Two days = 10% deduction  
- > Two days = 0 points