PSY 281: Principles of Learning, Fall 2017

Mon, Wed, Fri 12:50-1:50pm
Class meets in: G22 Hoyt
Office Hours: M, W 1:50-2:50; T 11:30-12:30


Course Description:
This course outlines how the person and brain acquire and store information, with a focus on different forms of learning and memory, and the neural substrates underlying these processes. We will focus on experimental studies that define our knowledge of learning and memory. Habit formation, conditioning, reinforcement, memory formation, memory failure, and memory loss in animals and humans will be reviewed.

Course Objectives: By the end of this course, students should aim to:
1. Recognize how learning and memory play an important role in our everyday lives.
2. Understand and describe methods with which scientists study learning and memory.
3. Identify the major forms of learning and memory.
4. Evaluate whether proposed neural mechanisms underlying learning and memory are valid based on critical review of the literature and the information you’ve obtained in the course.
5. Communicate via oral and written methods your understanding of how information is encoded, stored, and retrieved in the brain.
6. Understand how memory is lost or fails in a pathological and non-pathological manner.

Course Format: Let’s make this course interactive!! We will discuss material, worksheets, computer searches, psychological tests, and others. Please come prepared and plan to participate- and bring other topics to discuss.

Course Evaluation: Your grade will be based on a combination of scores from the following: participation in class, completion of Rat Basketball project, quizzes, worksheets, and exams. The breakdown will be as follows:
-Exams (3 total): 100 points each = 300 total
-Rat Basketball Project: 150 points total (breakdown below)
  IACUC training: 10 points
  Electronic data check-in: 15 points
  Tourney success: 15 points
  Animal care check-in (2): 20 points
  Notebook check-in: 15 points
  Paper: 75 points
-Participation: 6 pt/class, 5 classes required = 30 points
-Quizzes (5 total, you must complete 4): 10 points each = 40 points total
-Worksheets (5 total, you must complete 4): 10 points each = 40 points total
-Journal Article Choice and Abstract: 10 points
-Journal Article Review: 50 points

Your grade will be calculated as total points earned / 620 possible points to get a percentage. That percentage will correspond to the following letter grades. I do NOT round up (87.499999 is still a B).

- A: 93 to 100%
- A-: 90 to 92.99%
- B+: 88 to 89.99%
- B: 82 to 87.99%
- B-: 80 to 81.99%
- C+: 78 to 79.99%
- C: 72 to 77.99%
- C-: 70 to 71.99%
- D+: 68 to 69.99%
- D: 62 to 67.99%
- D-: 60 to 61.99%
- F: 0 to 59.99%

Attendance: You will receive a participation grade (which requires attendance). So please arrive having read any assigned material and be able to participate in discussions. Additionally, all materials will be available prior to class on D2L; it is your responsibility to print the slides prior to class. You will get 6 points per class in which you participate- meaning, you need to participate in 5 different classes. You can earn up to 30 points for participation, no more.
**Rat Basketball Project:** Throughout the semester, you and a partner/s will be training a rat to “play basketball.” This will be a fairly labor intensive process, but should be very enjoyable for all involved (you and your rat). More information is available about this project in an additional document; it will include a final paper.

**Worksheets:** There will be in-class and/or take-home worksheets. *Five worksheets will be given, only 4 count towards your grade. Therefore, you can miss a worksheet without penalty. You cannot make up a worksheet unless you have missed more than one. You cannot make up a worksheet unless you can demonstrate a legitimate reason for your absences.* The worksheets are designed to help you stay up to date with your reading and help your grade should you do poorly on exams. *Worksheets will often be graded as credit/no credit and often completed in pairs or groups.*

**Quizzes:** There will be in-class or online quizzes. Some you will know about, some you will not. *Five quizzes will be given, only 4 count towards your grade. Therefore, you can miss one quiz without penalty.* The quizzes are designed to help you stay up to date with your reading and help your grade should you do poorly on exams. *If you should arrive late to class on the day we are taking a quiz, you will not be given extra time to complete the quiz.* If a quiz is on D2L, it should be completed BEFORE class that day.

**Make-up, late work, and extra credit:** If you have legitimate excuses for multiple missed classes, you may make up a worksheet or quiz, sometimes with an alternate assignment. However, if you skip a class because you don’t feel like coming and miss a worksheet or quiz, and then later have a legitimate excuse that causes you to miss another - you will not be able to make up assignments. I generally don’t give extra credit, your grade will be the result of the points you earn in class.

**Journal Article Review:** You will write a review (5 pages) of a journal article relevant to learning and memory. You will receive 10 points for picking the article and turning in an outline, and an additional 50 points for your completed paper. More information will be provided in class.

**Exams:** Your exam grade will be based on the number of points you earn during 3 non-cumulative exams. All exams will consist of objective questions (i.e. multiple choice, true/false and matching), and short answer essays. All class or assigned external material is fair game. *Exams must be completed in 60 minutes class. I am happy to make exceptions for those with reason documented with the Learning Center.*

**Make-up Exams:** Make-up exams will be given for the following reasons: 1) Illness 2) A family emergency, crisis, or death (I may request a letter from the Dean of Student Affairs).

**CLASSROOM POLICIES**

**Accessibility Statement:** Westminster College actively strives for the full inclusion of all our students. Students with disabilities who require access solutions for environmental or curricular barriers should contact Faith Craig, Director of Disability Support Services, located in 209 Thompson-Clark Hall. Phone: 724-946-7192.

**Email:** I will be communicating with the class via email. You should all have a Westminster email account that you check regularly (i.e., at least once a day). Email is also the best way to get in touch with me.

**Electronic Devices:** Please do not text message during class. If you are using a computer to take class notes, all sounds must be silenced. Additionally, please do not use your computer for any activities other than those directly related to class during class time.
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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| Mon Aug 28 | Syllabus Review  
Introduce Learning and Memory  
Meet your rats!  
Rat Basketball | Rat Bball Assignment          |                                                      |
| Wed Aug 30 | Rat Basketball  
BEGIN CHAPTER 2  
Brain Regions | Chapter 2                    |                                                      |
| Fri Sep 1 | Neural Structure  
Synaptic transmission | Chapter 2                    | IACUC training DUE  
Bring questions about rat basketball! |
| Mon Sep 4 | Synaptic transmission  
Techniques to measure brain activity | Chapter 2                    |                                                      |
| Wed Sep 6 | Techniques to measure brain activity  
Neural mechanisms of plasticity in the brain | Chapter 2  
Chapter 3 p 105-106 | Quiz 1: Chapter 2  
Chapter 2  
Chapter 3 p 105-106 |
| Fri Sep 8 | Neural mechanisms of plasticity in the brain | Chapter 2  
Chapter 3 p 105-106 |                                                      |
| Mon Sep 11 | BEGIN CHAPTER 3  
Habituation  
Neural substrates of habituation | Ch 3 p 75-82, 96-99          | Quiz 2 on reading of Chapter 3  
STUDY HARD!! |
| Wed Sep 13 | Neural substrates of habituation  
Sensitization | Ch 3 p 96-99  
Ch 3 p 82-83 |                                                      |
| Fri Sep 15 | Sensitization  
Neural substrates of sensitization | Ch 3 p 82-83  
Ch 3 p 99-101 |                                                      |
| Mon Sep 18 | Learning through exploration: spatial learning  
Neural mechanisms of spatial learning | Ch 3 p 91-93  
p 107-110 |                                                      |
| Wed Sep 20 | Novel object recognition  
Priming | Ch 3 p 94-96,  
p 110 |                                                      |
| Fri Sep 22 | Catch-up and review |                             |                                                      |
| Mon Sep 25 | EXAM 1 |                             |                                                      |
| Wed Sep 27 | BEGIN CHAPTER 4  
Introduction to classical conditioning | Ch 4 p 117-126 | Journal Article choice and outline due either in class  
or via email by 12:50pm  
QUIZ 3 given out in class |
| Fri Sep 29 | Classical Conditioning cont. | Ch 4 p 127-133 |                                                      |
| Mon Oct 2 | Rescola-Wagner model | Ch 4 p 133-141 |                                                      |
| Wed Oct 4 | Classical conditioning  
Neural mechanisms of CC | Ch 4 p 148-161 | QUIZ 3 DUE: Chapter 4  
QUIZ 3 given out in class |
| Fri Oct 6 | Classical conditioning  
Neural mechanisms of CC | Ch 4 p 148-161 |                                                      |
| Mon Oct 9 | BEGIN CHAPTER 5  
Introduction to operant conditioning | Ch 5 p 167-179 |                                                      |
| Wed Oct 11 | SRO Associations  
Choice Behavior | Ch 5 p 180-191 |                                                      |
| Fri Oct 13 | Neural substrates of operant conditioning | Ch 5 p 191-200 |                                                      |
| Mon Oct 16 | BEGIN CHAPTER 6  
Introduction to generalization and discrimination | Ch 6 p 209-239 |                                                      |
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<th>Date</th>
<th>Topic</th>
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<tr>
<td>Wed Oct 18</td>
<td>Neural substrates of generalization and discrimination learning</td>
<td>Ch 6 p 240-252</td>
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<td>Fri Oct 20</td>
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<td>Mon Oct 23</td>
<td>NO CLASS: FALL BREAK</td>
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<td>Wed Oct 25</td>
<td>BEGIN CHAPTER 7</td>
<td>Ch 7 p259-271</td>
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<td>Fri Oct 27</td>
<td>Failure of episodic and semantic memory</td>
<td>Ch 7 p 272-279</td>
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<td>Mon Oct 30</td>
<td>Neural substrates of episodic and semantic memory</td>
<td>Ch 7 p 280-294</td>
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<td>Wed Nov 1</td>
<td>BEGIN CHAPTER 8</td>
<td>Ch 8 p 301-317</td>
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<td>Fri Nov 3</td>
<td>Neural substrates of skill memory</td>
<td>Ch 8 p 322-335</td>
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<td>Mon Nov 6</td>
<td>BEGIN CHAPTER 9</td>
<td>Ch 9 p 343-351</td>
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<td>Wed Nov 8</td>
<td>Introduction to cognitive control</td>
<td>Ch 9 p 351-360</td>
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<td>Fri Nov 10</td>
<td>Neural substrates of working memory and cognitive control</td>
<td>Ch 9 p 360-376</td>
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<td>Mon Nov 13</td>
<td>NO CLASS: SFN MEETING</td>
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<td>Wed Nov 15</td>
<td>BEGIN CHAPTER 10</td>
<td>Ch 10 p 385-405</td>
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<td>Fri Nov 17</td>
<td>Neural substrates of emotional memory</td>
<td>Ch 10 p 405-418</td>
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<td>Mon Nov 20</td>
<td>Posttraumatic stress disorder</td>
<td>Provided article</td>
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<td>Wed-Fri Nov 22-26</td>
<td>NO CLASS: THANKSGIVING BREAK</td>
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<td>Mon Nov 27</td>
<td>BEGIN CHAPTER 11</td>
<td>Ch 11 p 427-447</td>
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<td>Wed Nov 29</td>
<td>Neural substrates of social learning Learning across the lifespan</td>
<td>Ch 11 p 447-451, Ch 12 p 459-489</td>
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<td>Fri Dec 1</td>
<td>BEGIN CHAPTER 12</td>
<td>Ch 11 p 447-451, Ch 12 p 459-489</td>
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<td>Mon Dec 4</td>
<td>Learning Deficits</td>
<td>Ch 9 p 377-381, Ch 10 p 419-424, Ch 12 p 489-495</td>
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<td>Wed Dec 6</td>
<td>Learning Deficits</td>
<td>Ch 9 p 377-381, Ch 10 p 419-424, Ch 12 p 489-495</td>
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<td>Fri Dec 8</td>
<td>EXAM 3</td>
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<td>FINAL EXAM PERIOD: Rat Basketball Tournament!</td>
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<td>Rat Basketball Papers Due</td>
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