

Neurobiology of Learning and Memory Syllabus

Course description:

This advanced undergraduate course is designed to provide you with an introduction into the neural basis of learning and memory. The course will present both human and animal research. Topics covered will include: Basic mechanisms learning; learning theories; applications of learning; biological influences of learning; cognitive control of behavior and memory processes.

Time and Location:

1:00-2:20 PM on Tuesday and Thursday throughout Fall 2017 in Giltner 275.

Office hours on Wednesday 9:30-10:30AM (or by appointment) in Giltner 205

Core Textbook:

Learning 7: Principles and Applications, written by Stephen B. Klien.

Additional Reading:

Learning & Memory, written by Howard Eichenbaum

Further reading will be provided (i.e., peer-reviewed research articles and reviews) throughout the semester

Grading: Grades will be determined from five sources:

- (i) Module Quiz (25%): On four occasions during the semester a multiple-choice quiz will be administered on topics previously covered in class
- (ii) Group presentation (20%): During the course you will have the opportunity to critically evaluate a research article. On completion, you will be expected to deliver a presentation to the class where it will be discussed and evaluated
- (iii) Research paper (20%): Each student will write a manuscript based on a learning and memory topic
- (iv) Final exam (30%): Students will chose to response to a single essay question from the choice of topics covered in class
- (v) Attendance (5%): Attendance will be monitored throughout the semester; many classes will have overlapping themes, which are designed to help with conceptualizing the topics discussed. Students who attend less than 90% of the classes (without genuine mitigating circumstances) will receive an automatic 5% reduction in their grade.

Plagiarism and cheating: For students and instructors alike, academic integrity forms the backbone of our endeavors; plagiarism and/or cheating will not be tolerated and may be punished, including lowering of your grade and formally reporting the offense (see <https://www.msu.edu/unit/ombud/academic-integrity/index.html>).

Week beginning	Course topic(s)	Notes & activities
8/28/17	- Course introduction	- Class begins 8/31/17
9/4/17	- Module 1: Historical background - Module 2: Past learning theories	- Chapters 1 & 2
9/11/17	- Module 3: Habituation and sensitization - Module 4: Basic plasticity	- Chapters 2 & 3
9/18/17	- Module 5: Classical conditioning	- Quiz: Modules 1,2,3 & 4 - Chapter 4 - Additional reading: Chapter 2 in L&M
9/25/17	- Module 6: Neurobiological basis of classical conditioning - Module 7: Instrumental conditioning	- Online reading material provided - Chapter 6
10/2/17	- Module 8: Neurobiological basis of instrumental conditioning	- Online reading material provided
10/9/17	- Module 9: Memory consolidation, reconsolidation and amnesia	- Quiz: Modules 5,6,7 & 8 - Online reading material provided - Additional reading: Chapter 11 in L&M
10/16/17	- Module 10: Cognitive control of behavior	- Chapter 11 - Online material presented
10/23/17	- Module 11: Memory, concepts and language	- Chapter 5 - Quiz: Modules 9,10 & 11
10/30/17	- Preparation for group presentation	- Group meetings
11/6/17	- Group presentations	- Presentations
11/13/17	- Group presentations	- Presentations
11/20/17	- Writing seminars	- Online reading material provided
11/27/17	- Module 12: Learning models - Module 13: Cognitive models	- Chapter 11 - Chapter 12 - Research paper deadline 12/1/17
12/4/17	- Module 14: Maladaptive learning and memory processes	- Online reading material provided - Quiz: Modules 12,13 & 14 - Final exam: 12/7/17