

PSY-493, Section 006
Neurobiology of Drug Addiction, Fall 2024
Tues & Thurs, 8:30am-9:50am

Class Location:

Snyder Hall C203

Instructor Info:

Dr. Amy Arguello

Office: ISTB 4010

Email: arguell5@msu.edu

Hours: Zoom, By appointment

Course Description:

This course focuses on the neurobiological mechanisms underlying drug addiction. We will discuss and evaluate 1) current theories of drug addiction, 2) animal models used to study specific aspects of addiction, 3) molecular and cellular neuroadaptations that occur with acute and chronic drug use. Emphasis will be placed on critical analysis and discussion of primary literature and current methodologies used in the addiction field.

Supplemental Reading:

There is no required textbook for this course. Supplemental reading will be assigned and posted on D2L from these sources: 1) Primary literature, 2) Drugs, Addiction, and the Brain (2014) by Koob, Arends & LeMoal.

Available as MSU online resource: <http://catalog.lib.msu.edu/record=b10642232~S39a>.

Grading:

1. **Attendance and Participation:** *Total possible points: 10.0*
 - Participation during discussions is an essential component of the class and attendance is mandatory.
 - There will be 10 opportunities to gain attendance/participation points, 1 point/class.
2. **Weekly Pre-discussion Posts:** *Total possible points: 10.0*
 - 1/2 to 1 pg written summaries of discussion articles
 - Five summaries (up to 2.0 points each) will be due.
3. **Midterm Exam:** *Total possible points: 15.0*
 - Short answer and essay questions based on lectures and primary literature discussed during class.
4. **Group Presentation:** *Total possible points: 15.0*
 - Groups will choose from a list of articles and lead the analysis and discussion. *10.0 points*
 - Audience groups will develop 1-2 questions for post-presentation discussion. *5.0 points*
5. **Neurobiological Mechanism Take-home Exam:** *Total possible points: 15.0*
 - Short answer and essay questions based on primary literature discussed during class.
6. **Final Paper:** *Total possible points: 35.0*
 - 5-page, double-spaced research paper (Detailed final paper rubric posted on D2L).
 - You will 1) Review and critically analyze an assigned article, as per class discussions.
 - 2) Support your arguments based on the theories of addiction discussed in class.
 - 3) Design a novel experiment to test your hypothesis using techniques discussed in class.
 - You will turn in the final paper in sections for feedback and have the option to revise 2 sections. Intro, Methods, Results, Discussion, Future Directions

****For all assignments, detailed rubrics will be posted on D2L and outlined in lecture slides. Lecture slides will be posted on D2L after class. It is essential that your D2L notification settings for this class are enabled.**

Class Dates:

#	Date	Class Topic	Assignment
1 2	Tues 8/27 Thr 8/29	Reading Day Class Intro & Syllabus	Read: Online Tools for Writing
- 3	Tues 9/3 Thr 9/5	Holiday Theories of Drug Addiction + Article Tools	
4 5	Tues 9/10 Thr 9/12	Craving & Relapse Lecture Craving & Relapse Discussion	Weekly Summary 1 due,
6 7	Tues 9/17 Thr 9/19	Opponent Process Lecture Opponent Process Discussion	Weekly Summary 2 due
8 9	Tues 9/24 Thr 9/26	Habit/Incentive-Sensitization Lecture Habit/Incentive-Sensitization Discussion	Weekly Summary 3 due
10 11	Tues 10/1 Thr 10/3	General Theory of Addiction Lecture General Theory of Addiction Discussion	Weekly Summary 4 due
12 13	Tues 10/8 Thr 10/10	Memory Reconsolidation Lecture Memory Reconsolidation Discussion	Weekly Summary 5 due
14 15	Tues 10/15 Thr 10/17	Mid-Term Review Mid-Term Exam (In Class)	
- 16	Tues 10/22 Thr 10/24	BREAK 10/21, 10/22 Paper Outline, Write Tips & Tools, Rubric	In-Class Outlining
17 18	Tues 10/29 Thr 10/31	Neurobio Mechanism: Pharmacology Neurobio Mechanism: DREADDs	Introduction Due
19 20	Tues 11/5 Thr 11/7	Neurobio Mechanism: Optogenetics NeuroBio Exam Rev, Treating Addiction?	M&M, Results Due Grp Paper upload
21 22	Tues 11/12 Thr 11/14	Group Work Day Group-led Discussion #1	Discussion Due
23 -	Tues 11/19 Thr 11/21	Group-led Discussion #2 Group-led Discussion #3	Future Direction Due
24 25	Tues 11/26 Thr 11/28	BREAK (in-class individual, if needed) BREAK	11/28, 11/29 break
26 27	Tues 12/3 Thr 12/5	Group-led Discussion #4 Group-led Discussion #5	Final Paper Due (11/27-12/7)
-	Mon 12/9 - Fri 12/13	NO FINALS	

Grades will be assigned on the following scale:

90-100% = 4.0	75-79% = 2.5	<60% = 0.0
85-89% = 3.5	70-74% = 2.0	
80-84% = 3.0	65-69% = 1.5	

Additional Important Information:

Academic Honesty: The Spartan Code of Honor states, "As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at MSU, continuing the endeavor to build personal integrity in all that I do." *Plagiarism or cheating, use of generative AI to answer exam questions or to create the final paper may result in a failing grade on an assignment or in the course.* If you have any questions on this topic, please make an appointment so that we can address your questions. You can follow these useful links for more details:

[Academic Integrity | Office of the University Ombudsperson \(msu.edu\)](#)

Professionalism in Class:

Technology: This course is an upper-level, discussion-based class. As such, please respect both your instructor and classmates by silencing all electronic devices or choosing a seat toward the back of the class.

Disruptive Behavior: Article 2.3.5 of the Academic Freedom Report (AFR) for students at MSU states: "The student's behavior in the classroom shall be conducive to the teaching and learning process for all concerned." Article 2.3.10 states that "The student has a right to scholarly relationships with faculty based on mutual trust and civility." General Student Regulation 5.02 states: "No student shall.... interfere with the functions and services of the University such that the function or service is obstructed or disrupted." Students whose conduct adversely affects the learning environment may be subject to disciplinary action via the Student Faculty Judiciary process.

Missed Classes or Exams: Make-up exams will only be given in case of: 1) a documented medical or family emergency, or 2) a documented scheduled conflict, such as a religious holiday or required participation in a university-sanctioned event. The instructor must be notified of the above-mentioned conflict by email as soon as possible, otherwise a grade of 0.0 for that exam will be earned. For missed classes with no official documented excuse, 0.0 points can be earned for "attendance and participation".

Limits to confidentiality: Class materials are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, may not be able to maintain confidentiality when it conflicts with their responsibility to report certain issues to protect the health and safety of MSU community members and others. As the instructor, I must report the following information to other University offices if you share it with me: 1) suspected child abuse/neglect, even if maltreatment happened when you were a child, 2) allegations of sexual assault or sexual harassment when they involve MSU students, faculty or staff or 3) credible threats of harm to oneself or to others. These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like to talk about these events in a more confidential setting you are encouraged to make an appointment with the MSU Counseling Center.

[Counseling & Psychiatric Services | Michigan State University \(msu.edu\)](#)

Accommodations for Students with Disabilities: MSU is committed to providing equal opportunity for participation in all program, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or at the link below. Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation (VISA) form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date. Requests received after this date may not be honored.

[Welcome | MSU - Resource Center for Persons with Disabilities.](#)