Psychology 285: Drugs and Human Behavior

Department of Psychology/Neuroscience	Fall 2016
Loras College	
Lecture	Hennessy 070 TU/TH 12:30-1:50
Lab	Science Hall 014 2:00 – 3:50 TU: PA – Erin Weaver TH: PA – Thomas Johnson

Instructor: Jake Kurczek, PhD
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Office Hours: By appointment

Textbook: Julien, Advokat, and Comaty *A Primer of Drug Action,* 12th Ed. Worth Publishers.
Additional journal articles and materials will be assigned as needed and posted to eLearn.

Class Website: You will be able to find PDFs of the lectures and discussions posted on eLearn

Course Goals and Overview

This is a course about understanding and applying scientific methodology and application to the biological basis of drugs. Legal and illegal substances that alter mood, thought processes and behavior by influencing the functioning of nerve cells (neurons) will be discussed. The class will integrate guest speakers, lecture, discussions, and readings to demonstrate the influence of drug actions on the brain and to critically evaluate the role of drugs in our society.

Primary Course Objectives

- To gain factual knowledge that includes neuroanatomy, neuron and neurotransmitter function, and the mechanisms of action, the pharmacodynamics, and the pharmacokinetics of a number of licit and illicit drugs
- To explore several moral and ethical topics surrounding drug use and abuse in society
- To develop an appreciation of a scientific method by conducting research and applying quantitative reasoning

Learning Outcomes

- Students will be able to identify the neuronal structures relevant to addiction and will be proficient in determining how these structures are influenced by various drugs
- Students will demonstrate critical thinking by synthesizing behavioral, physiological, and pharmacological information
- Students will gain an appreciation for the magnitude of the effects drugs have had historically and continue to have today
- Students will be able to apply the scientific method (propose a hypotheses, design investigations, and collect and analyze primary experimental evidence not collected exclusively by surveys)
- Students will be able to evaluate claims based on quantitative reasoning
- Students will be able to describe how scientific knowledge relates to important public issues

Course Requirements and Policies

Course web page. Lecture slides, assignments and readings are available on the course web page - eLearn.

Lecture Attendance. Students are required –and expected - to attend all of the classes for this course. While I will not enforce a daily attendance policy, a failure to attend will reflect poorly in your participation/question portion of your final grade. A portion of this grade is reflected in the critical thinking journals, which are randomly distributed throughout the course. If you are going to miss a lecture, please do your best to let me know ***before*** class.

Absences and Make-ups. It is expected that you will turn in each assignment and take each examination at the scheduled time. A make-up exam can be taken only for excused absences. Unless highly unusual circumstances prevail, approval for excused absences must be obtained prior to the scheduled exam. If you fail to take an examination (an unexcused absence), you will receive a score of zero for that exam.

Conflicts with College-Sponsored Events. If you are involved in intercollegiate athletic competitions, theater and choral performances, or debate, and have activities that may conflict with this course you should follow these instructions from the College's official policies:

1. Submit a copy of your team/organization's schedule to your instructors no later than the first day of class with all specific course conflicts highlighted.
2. Through oral and email notification, communicate with your instructor(s) at least one class prior to each class that you are scheduled to miss to coordinate how you will make up and turn in missed work. Your course syllabus may require greater advance notice of a pending absence. You are expected to make up coursework missed (or an appropriate equivalent) by the original due date.
3. Forward all relevant changes to the schedule to your instructors as soon as you are notified.
4. Submit all course syllabi and schedule of course commitments to coach/moderator as soon as possible.

5. It is a privilege to participate in college-sponsored events. Students found to be intentionally abusing this policy will lose the opportunity to participate in college-sponsored events.

This policy does NOT cover practice for any college sponsored event, or academic/co-curricular conferences.

Posting of Lectures. PDF's of the lectures will be posted on the eLearn page for your reference. I will do my best to post lectures within 24 hours **after** the lecture. This is for both *practical* (I'm often working on these until the last minute) and *pedagogical* (I like you to take your own notes) reasons. Please note that these PDFs are not comprehensive in their information as much of what we study in class is through discussion and activities.

Academic Integrity. Loras College's policy: "Dishonesty (cheating, plagiarism, etc.) in class and/or assigned work will result in total loss of credit for the class and/or assigned work. Dishonesty in examinations, which are not final examinations, will result in total loss of credit for the examination. Dishonesty in final examinations will result in the grade of Fail for the course. All cases of student dishonesty are reported in writing to the Associate Vice President for Academic Affairs by the faculty member. The student may appeal cases of dishonesty to the Associate Vice President for Academic Affairs."

Cell phones, etc. Please turn off or silence all electronic devices during class. I will remember to do the same. However, feel free to use a computer/tablet for taking notes in class. If you want to record a lecture for personal use, please get my permission and do not post or share it publically.

Students with disabilities. Loras College is committed to supporting the learning process for all students. Please contact me as soon as possible if you are having difficulties in the course. There are also many resources on campus available to you as a student. Disability services: In accordance with federal law, if you have a diagnosed disability or believe that you have a disability that might require reasonable accommodations, please discuss your needs with me at your earliest convenience. Documentation of your disability must be on file with the Lynch Office, 120 Academic Resource Center, (563-588-7134) for you to receive accommodations.

Getting Help. If you find that you are having difficulties with the any of the material please contact me as soon as possible! Do not wait until late in the course. It is difficult to significantly improve your grade if there are only a few weeks left in the course. I am happy to help you. If you are not able to see me during office hours we can make other arrangements. You can also find resources at various centers including the Library, Writing Center, Office of Academic Support and Student Counseling Center.

Assignments

This course is based on an interactive lecture format where students will be expected to contribute to class discussions, brainstorming sessions, and small group work. Assessment of student learning will be determined as follows (see descriptions below):

Lecture Exams (2 @ 100 pts)	200

Podcast	50
30 Second Science	150
Infographic	100
Research Paper	200
Outline	(20)
1st Draft	(50)
Final Draft	(80)
Research Presentation	(50)
Laboratory Reports (4 @ 50 pts)	200
Discussion Leading	50
Participation	100
Group evaluations	50
TOTAL	**1100**

Late Work. Late assignments will be docked 10% from original total for every day after the assigned due date.

Lecture Exams
Testing will cover material presented in lectures and labs, and additional assigned material from the text, eLearn, handouts, discussions, guest lectures etc. Exams will take place on the dates specified in the course schedule. **If you have a conflict, notify me as soon as possible** (i.e. NOT the day before the exam) so that we can make arrangements to accommodate your schedule. There will be one mid-term exam as well as a semi-comprehensive final exam, and each of these will be given equal weight.

Podcast
At the beginning of the course you will be divided into small groups (4/group). In these groups you will create an infographic, complete laboratory exercises, complete a research paper, join me for a podcast and lead discussions. I'd like you to join me for a 10-20 minute conversation about your final paper topic. These will be scheduled when you lead your discussion. The form of the podcast will be like when Shankar Vedantam of the Hidden Brain Podcast visits NPR to talk about a new finding in science. I'll prepare some general questions, but we may talk about more specific things depending on your topic. It may be most helpful to you to have two recent articles about your topic that you can discuss.

Infographic
One of the most important skills to acquire in any scientific field is the ability to think critically about a given topic. Beyond thinking critically is the ability to break difficult information down into more understandable information. Infographics allow you to communicate information in a fun and understandable way. It is important for scientists to share information and educate others about the things that they study. Follow me @LorasNeuro for links to up-to-date research and news articles about Drugs and Human Behavior. You are ***strongly encouraged*** to share updates and information using the hashtag #HowDuBrainsWork. On 12/6 we will be engaging in a tweet up with students from a psychology class at St. Norbert College discussing their projects and ours.

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30 Second Science
30 second science takes confusing topics and breaks it down in an entertaining fashion. Each 30 second explanation includes multiple levels – 3 minutes explanation, 1 minute and 30 seconds and includes as much information in as easy to understand matter as possible. We'll produce these 30 second pieces for as many different drugs as possible so that people can better understand how drugs are produced, what they do, and how they affect us. We'll also share these, just like our infographics. The neuroscience program at Loras has a blog that we will put them on.

Research Paper/Presentation
Synthesizing information from multiple sources on multiple topics is a critical skill in science. The research papers will encourage students to develop their skills and abilities in information synthesis, and in scientific writing. Students will work in groups to research a given topic, and to write a "Review Article" style paper that discusses their findings. As indicated above, this assignment will be broken down into an "outline" assignment, followed by a draft of the paper, and an oral presentation:

1) Outline: Groups must decide on their specific paper topic and generate an outline of topics to be covered in their review paper. Full credit will be give for outlines that demonstrate a logical sequence of information and contain at least ten (10) peer-reviewed sources.
2) Draft 1: Groups must submit a review paper that incorporates the findings of the ten articles they submitted previously. Students are encouraged to include additional references as needed. These drafts should be focused around a central idea (e.g. "Why antidepressant medications are ineffective during the first week of treatment"). You will receive feedback from the instructor in the form of comments, suggestions, and corrections, and part of your grade on the final draft will be based on your ability to address those comments and suggestions.
3) Final draft: This draft should be a well-written, polished product that reflects the effort and time that the group has put into the paper, and your ability to respond to feedback. Notice that the final draft is weighed more heavily that the previous drafts: this is based on the understanding that writing is a skill and a process. You will get better through practice!
4) Presentation: This is your chance to show the rest of the class your findings. Presentations should follow the general outline of your written paper, and can be made with Powerpoint. All members of the group must participate in the creation and delivery of the presentation, and you will be evaluated as a group. A copy of the presentation (i.e. either electronic or printed) must be turned into the instructor.

Laboratory Reports
Certain laboratory sessions will involve various experiments and exercises that you will conduct within your small groups. As a group, you are expected to organize and report the findings of your experiments in a scientific manner in your laboratory journals. Each exercise should be summarized in a laboratory report, which should include:

1) A brief Introduction to the topic being investigated. This should include a study question and a set of predictions about the experiment based on the assigned reading(s) for each exercise.

2) A description of the Methodology used to test the study question.
3) A description of the Results that you found.
4) A brief Discussion of the implications of the findings of the study.

Each laboratory report is due one week following the completion of the laboratory assignment.

Discussion Leading

Laboratory sessions will also be a venue for class discussions on assigned reading materials. Early in the semester each lab group will select a date and set of articles to present to the rest of the class. On the appropriate date, each group will lead the discussion by first summarizing the assigned article(s), and then initiating discussion among the rest of the class by asking questions. Leaders of each discussion will also be responsible for submitting 3-4 questions, based on the topics covered in their discussion. These questions may appear on the next exam. Your grades for this component of the course will be based on: a) demonstrated understanding of the assigned materials, b) your ability to synthesize material from the articles with additional references and/or material presented in lectures, and c) your ability to stimulate engaging discussion.

Participation

Our discussions will require thoughtful and active participation. Participation will be aided by pre-class assignments and in-class writing. Further, we will have 3 guests joining us to share their expertise. I ask that each of you submit 2 questions to the forums for each of the guest lectures 2 days before they arrive. To facilitate the discussion, please also submit 2 questions to the forums for the discussion days that you are not discussion leader. Post these to eLearn (Daily Forums) the night before class (9:00PM). Class participation will be based on active participation in the discussions and also the submission of these assignments and questions the night before class.

Group Evaluations

A portion of your grade will be determined by group assignments (e.g. quizzes, infographic, review paper, etc.), and it is critical that all members of a group participate to the best of their abilities. At the end of the semester, you will evaluate your group members (and they will evaluate you) on their contribution to these assignments.

Important Dates

9/5 – Labor Day, No class
9/16 – Last Day to Drop
10/17 – 10/18 – Fall Free Days
10/28 – Last Day to Drop (receive W)
11/23 – 11/25 – Thanksgiving Break
12/9 – Last Day of Classes
12/12 – 12/15 – Finals Week

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Schedule*

Day	Topic	Reading	Assignment
8/30	Course Intro		Course Intro
9/1	The Neuron, Synaptic Transmission	Ch 1	
Lecture	Lab Intro		
9/6	Neurotransmitters	Ch 1	
9/8	Pharmacokinetics	Ch 2	Paper Topic
Lecture	Pharmacodynamics	Ch 3	
9/13	How and why Research		
9/15	Guest – Cpl. Steve Eastvedt – Dubuque Police Department		
Lab 3	Scientific Method		
9/20	Clinical Trials / Drug Development	DiMasi, Hansen, & Grabowski, 2003; Petryna, 2005	
9/22	Advertising / Propaganda	Gaudillière, 2013	Outline Due
Lab 4	Statistics		
9/27	Genetics/Individual Differences	Ch 4	
9/29	Alcohol		
Lab 5	Genetics/Individual Differences		Lab Reports 3 & 4
10/4	Guest - Mary Boots - SASC	Ch 5	
10/6	Library Instruction Infographics and Science Communication		
Lab 6	Alcohol Lab	White & Hingson, 2014	
10/11	Caffeine and Nicotine	Ch 6	Research Paper Draft 1
10/13	Antipsychotics / Antidepressants	Berton & Nestler, 2006; Roth, Sheffler, & Kroeze, 2004	
Lab 7	Caffeine Lab		Lab Report 6
10/18	**Fall Free Day – No Class**		
10/20	Guest – Dr. Feldman – Mt. Mercy		
No Lab	**No Lab**		

10/25	Herbal Supplements	Cohen & Ernst, 2010	
10/27	Review		
Lab 8	Herbal Supplements		Lab Report 7
11/1	**Midterm Exam**		
11/3	Anxiolytics	Ch 13	
Discussion	Drug (De)Criminalization Podcast 1	Hughes & Stevens, 2010; Werb et al., 2011	Lab Report 8
11/8	Cannabis	Ch 9	
11/10	Anabolic Steroids / NSAIDS		
Discussion	Cannabis Podcast 2	Cerdá, Wall, Keyes, Galea, & Hasin, 2012	
11/15	Psychedelics	Ch 8	
11/17	Infographic Peer Review		
Discussion	Psychedelics Podcast 3	Sessa, 2014	
11/22	Cocaine & Psychostimulants	Ch 7	30 Second Science Due
11/24	**NO CLASS - Thanksgiving**		
No Lab	**Thanksgiving Break**		
11/29	Opioids	Ch 10	
12/1	Paper Peer Review		Infographics Due
Discussion	Opioids Podcast 4	Hoffman, Patterson, Carrougher, & Sharar, 2001; Manchikanti & Singh, 2008	
12/6	Tweet Up with SNC Physio Psych		
12/8	Final Review		Research Paper Due
Discussion	Presentations; group evaluations		
12/12 – 12/15	**Finals Week – Final Exam**		

*Instructor reserves the right to modify this syllabus and schedule when necessary. Modifications will be made following notification via e-mail, eLearn, and/or in class announcement

References

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Potential Topics

The 30 Second Science project will be the correct venue to introduce and discuss a particular drug (e.g., Alcohol, nicotine, marijuana/cannabis, cocaine, LSD, amphetamines, opioids, steroids, etc.). Your research paper on the other hand is the place where you make a connection between the neuroscience of drugs and humans behavior with more broad societal issues.

Effects of Drug lobbying
Drug development – cost, orphan illness, what should happen to publically subsidized profits?
Ethical concerns surrounding nootropics
How does a drug become a banned substance? -WADA
Alternatives to opioid pain medication
Religious aspects of drug use
Effects of drug decriminalization
Differences in metabolism of drugs across the lifespan – implications for treatment
Issues of drug treatment, specific to teenagers
Defining success/failure in "war" on drugs
Who wins what when drugs are legalized?
Success/Failures of anti-drug campaigns
Addiction as a "disease" vs addiction as a "choice"
Costs vs benefits of drug testing – jobs, state/federal benefits