

Summer 2020_Drugs and Human Behavior 830:360:B6

Instructor: Alexander Kusnecov, Ph.D., Professor

SYLLABUS

830:360:B6

DRUGS AND HUMAN BEHAVIOR

Summer 2020, May 26 – July 03

Class Location: Remote Instruction – Learning Management System: Canvas

Meeting Times: Asynchronous through recorded lectures, uploaded notes, and submission of assignments and tests/quizzes

Instructor:

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Office Hours: By Arrangement *

Office Location: Room 233a, Psychology Bldg, Busch Campus

* I will use Tuesday nights to address any questions that you may have about material that we have covered in a previous week. We can meet by Webex or correspond via the chat room or email. I am flexible. If something requires a discussion, I will request you enter my Webex room for a discussion. This may be through canvas or a link I send you via email. If you cannot contact me on Tuesday nights, send me an email. I may be delayed in responding, but you will get a response.

VERY IMPORTANT: Please adjust your notification settings in Canvas to allow all announcements and emails from this course to be sent to your email account. Failure to do this will result in missed messages. I will not be responsible for any loss of points if this happens.

Course Synopsis

Human nature is fickle, curious, and abhors a vacuum. People thrive on novelty and creativity. The allure of new experiences satisfies basic characteristics of human behavior, and is at the heart both of personal growth and self-destruction. That's the way of it. In this course, we address one prominent instance of this particular rule – the allure of psychoactive substances. The consumption of chemical substances has long preoccupied humans due to the natural craving for pleasure and happiness, including relief from pain. *The downside of this preoccupation is addiction and dependence.* The presence in human culture of *psychoactive* drugs – mind-altering chemicals – is ubiquitous and entrenched at all levels of social activity. Many reasons account for this, drawing on historical, sociological, biomedical and psychological perspectives. We will touch on these through a *biopsychosocial* approach, that involves knowing about the neurobiological, behavioral and social factors that influence drug use and abuse. Given that any form of dependence and addiction results from a drug's psychoactive properties, it is imperative to understand how the brain is “hijacked,” and sometimes irreversibly changed, by substance abuse. Therefore, the course will consider how the brain allows us to experience reward and pleasure, and how long-term use of drugs modifies this important aspect of brain function. Moreover, studying drugs of abuse has led to important developments in understanding how to chemically treat psychiatric disorders. This area is known as clinical psychopharmacology.

Learning Goals

Approximately 50% of the lecture material focuses on the neurobiological and physiological effects of psychoactive drugs. I assume little background in neuroscience (other than what was covered in Gen Psych 101), and explain in detail only what you need to know (a more thorough treatment of brain-behavior

relationships is another course, Physiological Psychology, 01:830:313). My role in lecture is to make sure you understand the physical substrate – neurons - on which drugs act, thereby changing a person's behavior and consciousness. There is no point taking a drugs and behavior class without diving into how the brain works. In order for our understanding of addiction to be meaningful, we need to appreciate that psychoactive drugs are chemical substances that act on the chemical activity of the brain. And the only reason people take these drugs is *because* of highly unique actions on the brain. No one is getting high on advil or Tylenol. These drugs can influence physiological processes – and at times the brain - but their impact is not at the level of changing conscious experience that is perceived as a “turn-on.” No one is getting “buzzed.” Whether we are asking “how do drugs change behavior?” or whether we are asking “why does behavior change when we take particular substances?” the answer is always going to involve the brain!

In this context, we will address the following major learning goals:

- Appreciate human and animal research on how drugs of abuse impact the brain
- Understand why drugs of abuse are *psychoactive* and capable of producing dependence
- Consider the neurobiological and behavioral actions of the main classes of legal and illegal drugs of abuse
- Define *addiction*, *abuse*, *dependence*, and *tolerance* as these terms apply to drug use
- Learn about the major categories of psychoactive drugs: the stimulants, depressants, opiates, and hallucinogens
- Learn about the neurobiological and behavioral effects of cocaine, amphetamine, heroin, cannabis, alcohol and other psychoactive drugs
- Consider the motivational variables that contribute to drug-seeking behavior
- Understand the problems associated with preventing *relapse* to drug-taking behavior by addicted individuals
- Understand the management of *behavioral abnormalities* (eg., schizophrenia, depression, anxiety disorders) through pharmacological approaches, sometimes referred to as clinical psychopharmacology

Reading Material

There is no textbook. But there will be readings.

Handouts (Slide Sets) for the powerpoint lectures will be posted in the Canvas module called ‘Lecture Material’. Moreover, powerpoint shows or videos of recorded lectures will be posted on Canvas, in a module simply called ‘Powerpoint Shows.’

Those with little background in neuroscience will find the following useful:

For those students that have not taken a neuroscience course or physiological psychology (830:313), and are a little stuck in understanding some of the material, the following links may be helpful. Of course, always [contact me](#) if you need clarification on material.

For the neuroscience novice this is useful: <http://thebrain.mcgill.ca/> Look at the top for ‘brain basics’ and follow the link ‘from simple to complex’ – this will supplement or round out any misunderstanding from my own slides; the link ‘pleasure and pain’ may also be helpful

On the science of addiction the National Institute of Drug Abuse (NIDA) has useful publically available information: <http://www.drugabuse.gov/publications/science-addiction>. I have selected some of your readings from this website to address specific drugs.

Academic Integrity

The following statement normally applies to in-person classes. However, even in a remote, online environment I expect that you are trying to do the work on your own. The course is fully open book, as will be the tests and

quizzes. However, it is expected that all work is done by YOU! Read the following so you are aware of what can take place.

Here is the link to the Rutgers academic integrity office: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/>. If you have not already done so, you should explore this, and in particular the ‘Academic Integrity Policy’ link, where you can read the levels of violation and sanctions. When submitting work through an online mechanism (e.g., exams, quizzes and assignments), it is expected that you will do so without the assistance of any other person, and that you are the person submitting the work. This aspect of assessment simply requires an honor code. When submitting written assignments these will be screened for evidence of plagiarism. Go to this link <http://academicintegrity.rutgers.edu/?s=plagiarism> and access the information in the website given in the box titled: ‘resources for students.’

Assessment

Exams (40% of total grade): There will be TWO open-book exams. Both exams will be online (through Canvas). The exams will be a mixture of written-answer and multiple choice questions. Exam 1, 20% of total grade; Exam 2, 20% of total grade. Note that exams will also test you on material from your reading and documentary assignments.

Assignments and Quizzes (60% of total grade: 20% for written papers on reading; 20% for written reports/quizzes on documentaries; 20% for quizzes on lectures and reading)

The assignments will involve the following:

- (i) Reading assigned material posted on Canvas. This will be assessed using online quizzes and written assignments;
- (ii) Viewing documentary films and writing up reports on these films. Your reports will be based on probe questions posted on Canvas. The documentaries provide a wider context to the more specific information learned in class.

Grading System

Students will need to achieve predetermined cut-off points for grades of A, B+, B, C+, C and D. Cut-off points will be as follows:

A 90-100 B+ 86-89.9 B 78-85.9 C+ 74 -77.9 C 65 -73.9 D 55-64.9 F <55

Makeup and Late Penalty

The online submissions (whether exams, quizzes or assignments) will be docked points if submitted late. **A late submission that is permitted and is 1-8 hours late will be docked 20%, 9-16 hours, 40%, and 17-24 hours 80%; beyond this, there is no opportunity for a grade.** I will need you to verify all excuses for late submissions.

I know that “stuff happens,” and interferes with your ability to take an exam, a quiz, or submit an assignment on time. You need to provide me with documentation that proves the nature of the interference. *It is not guaranteed, but I will determine the merits of your case and make a decision as to whether you can make up a missed exam, quiz or assignment.*

After seeing the schedule below, if you anticipate a conflict, you have the option of taking an exam EARLIER or LATER than the scheduled time. Legitimate reasons for this are: Summer employment hours compete with course time points; Rutgers athletic obligations, religious events, and other similar (predetermined and fixed)

events that are going to interfere with taking exams. **It is up to you to anticipate the conflict now**, and let me know. These requests have to be unique and consistent with Rutgers rules for accepted exceptions.

LECTURE AND ASSIGNMENT SCHEDULE

Please note this is the intended flow of topics to be covered each week. The timing for introducing a topic may vary.

Online Quizzes

Dates and times for quizzes are subject to change, but for the most part will be available as stated in the weekly schedule below. When they are ready to post, these will be delivered using the ‘announcements’ tool in Canvas.

Once a quiz is posted, you will have at least 24 hours to start the quiz. Once you start a quiz, you cannot stop, log out and come back to the quiz. No quizzes or exams will have a return feature. This is a policy that ensures you have thoroughly familiarized yourself with posted material. Once you start a quiz (or exam) you must complete it in the allotted time (which will typically be 40-60 minutes; Exams will be longer). Save your answers as you move along.

Technical problems and the potential for temporary grades

Please note that reports of technical trouble in taking a quiz or exam (e.g., browser not showing the quiz) needs to be reported immediately. However, I should state that if you are logged into Canvas, then there is no reason not to see a test. That is, if I can see it in student view - or my graduate student (who will be a quasi-TA in a student role) - then it is impossible for such a claim to be true.

Nonetheless, problems logging in or having internet issues are legitimate (I am livid when I get them and threaten to quit my service provider . . .). So I will take this seriously. If they recur to the extent that you are indefinitely delayed, you will receive a temporary grade when the course is completed, so that new questions can be formulated to ensure academic integrity. I will deal with all of this on a case by case basis.

Weekly Schedule

Note that our “week” will always begin on a Tuesday (first Tuesday is 5/26, second Tuesday 6/2, etc.). Where you read “Lecture,” this refers to an uploaded pdf file containing detailed notes about each slide, as well as powerpoint shows (presented as modules) in which I go over the slides. You should read both the pdf file, as well as view the powerpoint show, since the latter will complement the pdf file. I will upload lecture material on Tuesdays and Thursdays.

Each week lists what you should do. If you do not attend to what is listed, you will fall behind. Taking courses online sounds easy, but still requires focus, discipline and organization.

Week 1 (Lectures uploaded 5/26 and 5/28): How does the brain get hijacked by drugs of abuse?

Introductory comments about factors that determine drug use – e.g., personality variables; the psychosocial environment.

Overview of the central nervous system (CNS).

- (i) The Nervous System: Neuroanatomy; neurons and their organization in the brain

- (ii) Reasons why the default state of the brain is “excitation.”
- (iii) Psychopharmacology – the study of how neurons communicate with each other chemically and what this means for behavior

Required Reading to prepare for Week 2: NIDA #1 (overview of drugs and addiction science) and the article ‘The Joyful Mind.’ Note that an online quiz will be given on these articles toward the end of Week 2 (see week 2). Also if you have the time, jump ahead to Week 2 and view the Meth Epidemic documentary sooner.

Week 2 (Lectures uploaded Tuesday 6/2 and Thursday 6/4): The Brain Reward or “Pleasure” System

Lecture Material. We will complete any outstanding information about the CNS and consider the “pleasure” system in the brain – a critical target for drugs of abuse. Additional notes will be posted.

Online Quiz #1: Thursday 6/4, 11AM. This quiz will be on the reading assignments from Week 1 (NIDA#1 and The Joyful Mind), and the lecture material uploaded on 5/26. You will be notified when this quiz is ready. Once posted, it will remain open for 36 hours.

Required Reading to prepare for Week 3: NIDA #2 (nicotine), #3 (cocaine), and #4 (methamphetamine); this will prepare you for the lecture material in week 3. Exam 1 in Week 3 will test your knowledge of these articles.

Reading & Writing Assignment #1 (submission will be in Week 4; see below). Please read the four articles in the ‘Reading_Writing_Assignment_1’ module on Canvas. There will be an assignment link set up through which you will be able to submit your written report. The assignment will be written responses to specific questions that will be in a document called ‘R_W_Assignment 1 Questions,’ and can be found in the same folder as the readings.

Documentary Assignment 1 (for submission in Week 3): Watch the Frontline documentary on the Meth Epidemic. Go to the following link: <https://www.kcts9.org/show/frontline/episode/frontline-the-meth-epidemic> . The report can be submitted in Week 3, but watch it in advance to appreciate the lecture material uploaded on Tuesday 6/9. Probe questions will be posted for you to answer in writing. A quiz will be given that assesses your responses to the probe questions.

Week 3 (Lecture material uploaded Tuesday 6/9 and Thursday 6/11): Legal Stimulants and Illegal Stimulants

This week’s material will discuss the drugs Nicotine, Caffeine, Cocaine and the Amphetamines (including methamphetamine). We will also discuss ‘ecstasy,’ which is a slang term for MDMA (3,4-Methylenedioxy methamphetamine), a modified amphetamine with decidedly different characteristics to the powerful stimulant effects of cocaine, amphetamine and methamphetamine.

Required Reading: NIDA reading #5 (on heroin) and a textbook chapter on alcohol (a quiz on these readings, as well as lecture content will be given at the end of Week 5)

Thursday 6/11, 12PM-11PM: Submit report on Frontline Meth Epidemic Documentary and complete the associated Quiz: Submit the report via an assignment link for Documentary Assignment 1. The quiz will be posted and will be called Online Quiz #2 (on Meth Documentary).

EXAM 2: active on Sunday 6/14 at 12 PM until Monday 6/16, 11PM. The Exam will include material on the stimulants (legal and illegal). Students must start the exam by Monday 9PM. Once the clock strikes 11PM, the

exam will be submitted irrespective of whether all questions have been answered. Therefore, prepare to start earlier in the day, or on Sunday afternoon/evening.

Week 4 (Lecture material uploaded Tuesday 6/16 and Thursday 6/18): Alcohol and Opiates

Lecture Material. Topics covered this week will be the opiates (e.g., heroin, morphine, fentanyl) and alcohol. A considerable proportion on alcohol will be based on reading.

Submit Reading and Writing Assignment #1 on Thursday 6/18, by 11 pm. An assignment link will be provided.

Documentary Assignment #2: Watch the Frontline documentary Chasing Heroin (access will be through the library, as I will explain). Answer probe questions and submit the report. Then complete Online Quiz #3 on this documentary. (Submission deadline: Friday 6/19, 11 PM). The link for submitting the report and taking the quiz will be created by Wednesday 6/17 5PM.

Reading and Writing Assignment #2: Readings will be posted on the food industry and food addiction. You will need to submit an essay response in Week 6.

Required Reading: NIDA readings #6 and #7 to prepare for lecture material in Week 5.

Online Quiz #4 (lecture/reading): This will cover the lecture material and the required reading from Week 3. This will be open Friday 6/19 at 9am and close Monday 6/22, 11 pm.

Week 5 (Lecture material uploaded Tuesday 6/23 and Thursday 6/25): Cannabis and Hallucinogens

Lecture Material: Lecture material will mainly be on Cannabis. Hallucinogens will be covered through your reading.

Documentary Assignment #3: MDMA (ecstasy) The link to the documentary is: <https://vimeo.com/32131518> Probe questions will be posted in the relevant module. There is no written report to submit. However, there will be a brief quiz – Online Quiz #5 (MDMA Documentary). This should be completed by Monday 6/29, 11 pm.

Writing Assignment #3: (Submit by Tuesday 7/3, 5pm through the assignment link). Write a short essay (no longer than 2 pages) detailing your thoughts about the legalization of cannabis. Some articles will be provided to stimulate your thoughts. You should be scholarly, objective and non-emotional in your essay. Provide any additional sources of information that you find.

Online Quiz #6 (lecture/reading): This will cover the lecture material and the required reading since Week 4. The quiz will open Friday 6/26 at 11 am and close Monday 6/29, 11 pm.

No further readings for week 6.

Week 6 (Lecture material uploaded Tuesday 7/3): Psychotherapeutic Drugs

Finish any material from Week 5. Proceed with lecture material on anxiety, depression and schizophrenia. Lecture material will cover the drugs used to treat mental health problems, and whether these are effective.

EXAM 2: Thursday 7/2, 12PM - Friday 7/3, 11AM. As with Exam 1, start 2 hours before the Exam automatically submits. Assessment will be on lecture material from Weeks 4, 5 and 6.