

SYLLABUS

830:360:01

DRUGS AND HUMAN BEHAVIOR

Fall 2017

Class Location: Room [AB 2125](#) - Academic Building, College Avenue Campus
Meeting Times: Mon and Thurs, 11:30AM – 12:50PM

Instructor:

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Office Hours: Wed 11:30 - 12:30
Office Location: Room 233a, Psychology Bldg, Busch Campus

Directions to Professor Kusnecov's office: Students invariably get lost, since there is a room 233 in another part of the building, at the opposite end of where my office is located. To find me, come into the building on the Allison Rd end, by walking up the outside ramp (not steps – if you are going up steps, you're on the opposite side of the building). After you enter, turn RIGHT (not left), after which you go through a single door, then onward through a large double door. You will then find yourself in a long hall (which is the 2nd floor of the bldg.), and my office will be a few doors on your right.

Teaching Assistant:

Sara Norton, MSc
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Office Hours: Tue 11-1
Office Location: Room 232, Psychology Bldg, Busch Campus

Directions to Ms. Norton's office: If you find Professor Kusnecov's office, the lab (Room 232) will be directly opposite. Step inside the lab, then turn right. The office will be in the corner.

Some information about office hours: Meetings can be subject to special arrangement, but only for exceptional circumstances, and will not take place after 3pm. Therefore, if a meeting is impossible, phone calls can be arranged, as well as talking to me after a lecture. Email correspondence is acceptable at any time (but I may not respond promptly). Also note that questions that require extended email responses will necessitate a face-to-face meeting – so plan to see Sara or myself if you need detailed responses. Note that *clarification* is the goal of office hours – not a repeat of a missed lecture or large segments of a lecture. After exams, students want to look at their exams. This is fine. DO THIS WITH Ms Norton. My time is best used to provide you with clarification and additional information you may need to know. If Ms Norton cannot explain why your answers are off base, she will ask you to see me. It will be your responsibility to contact me, if that is the case.

PLEASE READ THE REST OF THIS SYLLABUS VERY CLOSELY.

Important Note: The posting of this syllabus on Sakai is confirmation that you have read this syllabus and understand the course requirements. You will be alerted in class and through email that the syllabus is available for you to review.

Course Synopsis

Human nature is fickle, curious, and abhors a vacuum (. . . we are easily bored). People thrive on novelty and creativity. The allure of new experiences satisfies the basic characteristics of human behavior, and is at the heart both of personal growth and self-destruction. That's the way of it - and examples are abundant. In this course, we address one prominent instance of this particular rule. 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 various levels of social activity. There are many reasons for this, and these can be analyzed from historical, sociological, biomedical and psychological perspectives. We will touch on all these perspectives, taking a *biopsychosocial* approach, that involves knowing about the neurobiological, behavioral and social factors that influence drug use and abuse. Given that any form of dependency 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 latter area is particularly controversial at present, and the course will address the pros and cons of this area of psychopharmacology.

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

Textbook (required):

Drug Use and Abuse, 7th edition. S.A. Maisto, M. Galizio, G.J. Connors; Wadsworth Publishing

Handouts for the powerpoint lectures will be posted on sakai.

Useful websites for those with little background in neuroscience:

The textbook contains a chapter on the basics of the brain, and provides some details about the neurobiological effects of specific drugs. However, if students 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 speak up, or come to office hours to get clarification.

- (a) For the neuroscience novice: <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, but we will go far deeper than what is provided)
- (b) On the science of addiction: <http://www.drugabuse.gov/publications/science-addiction> (this is relatively simple and meant for the public, but useful to get you into the mood)

Ground Rules (for decorum, and avoiding my wrath) and Some Other Useful Information:

- (i) **RECORDING.** *Before you decide to record the lecture, ASK ME.* You will need a good reason, since there are slide sets to download, and I tend to repeat ideas and concepts quite a bit.
- (ii) **LAPTOPS.** *Laptop use is allowed, but you must sit in the back rows and agree to shut it down if I request it. If you do not follow this rule, I will ask you to leave the class room. A student who must sit closer to the front, will be excepted. But a strong case needs to be made.*

You should also note that in my classes laptops are a disadvantage. I am a heavy user of the black board and draw graphs and experimental designs. Best to print off the lecture slides, then use a pen. You will do so much better. Read on . . .

This section is designed to help you. PLEASE READ.

There has been a flurry of concern in academia regarding whether having a laptop in a note-taking class is useful for students (eg., go to these links: <https://www.washingtonpost.com/posteverything/wp/2014/12/30/this-year-im-resolving-to-ban-laptops-from-my-classroom/> and <http://www.newyorker.com/tech/elements/the-case-for-banning-laptops-in-the-classroom>). The expectation of the professor is that a student is using the laptop only to take notes, and not to check email, chat on facebook, surf the internet, watch videos, and so on and so forth. We all know this happens. When I have observed the lectures of my colleagues, I sit at the back, and it’s astounding how many laptop-using students are actually scrolling through the lecture slides (very few).

Because I have received complaints from students being distracted by a laptop user’s constant internet surfing and other non-class related activity (and the articles linked above and below confirm this), **if I receive a single complaint from a bystander student who is distracted by non-class related use of a laptop, the particular laptop user in question will be asked to shut it down. To**

control for this, those who think a laptop is a “must” for them, will sit in the very back rows of the lecture room.

NOTE-TAKING WITH LAPTOPS: not proven to be an advantage. Aside from the above links, formal studies have shown that laptop users don’t do as well as those using more traditional approaches (pen and paper). (eg., read this <http://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/>). Also, those sitting near laptop users also fare worse (through unavoidable distraction). Over the years, I have also kept track of students who use laptops in my classes, and it matches the literature: they don’t do nearly as well as hand writers. Moreover, the top students (those who fall in the top 25%) in my classes over the years have been the ones who limit any form of distraction (they did not use laptops, nor kept checking their smartphones – well, some might have . . . we will address this particular addiction). The data were objective: they simply did better. If for some reason you cannot use a pen, and must use a laptop, stick to taking notes (in other words: turn off wifi access).

An additional note about active learning: Film director Woody Allen once said: *95% of success is simply showing up. So, come to class.* Experience the physical experience of listening and watching. Handwrite your notes. Then review them as soon as possible; rewrite and organize what you have written (this is where the computer is your friend) – in doing this, you have already had your first study session. Moreover, you have relived the lecture before you have forgotten it (eg., try remembering lecture 2 by the time you get to lecture 7 or 8; in this course, the information piles up fast, and the topics change quickly – if you don’t regularly review and organize your notes, it will be like shoveling snow in a blizzard). If you follow the above advice, you will get to the review material quickly and do an active mental replay, and in doing so, you are effectively preparing yourself for that big crunch time – the day before the scheduled exam.

- (iii) **TURN OFF YOUR CELL PHONES!** I once had a student texting for 5 minutes right in front of me, the very front row. I stopped talking, stood over her (still texting), and said: “I can’t believe you don’t realize what you are doing.” She turned bright red, and later realized the folly of her action, and how she must have come across. Needless, she stopped texting in class, and ultimately did well. Moral to the tale: **DON’T TEXT IN CLASS.** Before you sit down, let those important to you know that you are in class respecting the right of the professor to have your undivided attention. *After all he is giving you HIS undivided attention.* If you have to make an important call or get into some vigorous text-messaging exchange, please **STEP OUTSIDE.** I will draw attention to you if I suspect you have “left the room” and immersed yourself in another space and time. At which point, you will not feel terribly smart.
- (iv) **DO NOT ENTER INTO EXTENDED CHIT-CHAT** with your neighbors – this is the height of rudeness, disrespects the professor, and **MORE IMPORTANTLY** disturbs the listening rights of your student peers. BTW: Feel free to tell those near you to “put a sock in it” if you are distracted by silly giggles and mindless chatter that goes on far too long. FYI: In all my time of teaching at Rutgers (since 1998), I have thrown students out of the classroom for talking on only three occasions, after being unresponsive to requests to quiet down. That’s a low rate. **BUT IT HAPPENED.**

Do good work, respect those around you, listen to the lecture, and come out ahead. Why else are you here?

Academic Integrity

I have on occasion encountered a situation of academic dishonesty, so you should be aware of 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. If during exams I determine that you are acting in a dishonest manner, you will be asked to leave the exam.

When taking an exam, merely looking at your cell phone or some other instrument or paper, can instantly disqualify you from receiving a grade in that exam. Depending on the situation, further deliberation by the Professor may rule you out of receiving a passing grade altogether for the course (Note: as stated on the academic integrity website, students have the right to appeal decisions made by the Professor). In other cases, if we determine that it *appears* you are violating the rules of proper academic conduct in an exam, you will be warned or asked to move to another seat. Finally, when submitting work through an online mechanism (eg., 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.

Assessment

Exams (80% of total grade): There will be three exams. The exams will be a mixture of written-answer and multiple choice questions. Exam 1, 20% of total grade; Exam 2, 25% of total grade; Final Exam 35% of your total grade.

Assignments (20% of total grade): Video Assignments and Online Quizzes will be provided. Questions for video assignments will need to be answered and submitted on Sakai through the ‘assignments’ link. The questions will be posted on Sakai. The video assignments will be taken outside of class (by streaming video content via the library computers or off-campus); discussion of the videos will be integrated into the basic lecture material. Quizzes will be based on textbook reading.

Extra Credit. Quizzes taken based on reading specific chapters in the book. Moreover, in the Final Exam, some questions that are cumulative in nature, will serve as extra credit.

Grading System

There is no curving used for grading. 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 Exams

I will need to verify all excuses for missing an exam. If you do miss an exam, the makeup will consist of a different set of questions. If the exam is missed for a legitimate and verifiable reason, the student must sit for

the makeup within three weekdays (excluding the weekend) of the scheduled date for the missed exam. Written and signed documentation will be required.

IMPORTANT: Assuming you are not “out of commission,” failure to take the makeup within three weekdays of the scheduled exam will mean that you will forfeit the points that would have been earned in that exam.

After seeing the schedule below, if you anticipate a conflict, you have the option of taking an exam EARLIER than the scheduled time. Legitimate reasons for this are: Rutgers athletic obligations, religious events, and other similar (predetermined and fixed) events that are going to interfere with taking the scheduled exam. It is up to you to anticipate the conflict, and let me know about these upcoming events so that we can administer the exam earlier. If you don't take the exam, then you will either (i) fail to receive any points, or (ii) have the option to take the makeup within three working days after the scheduled date for the exam.

LECTURE SCHEDULE

Please note that this is the intended flow of topics that will be covered each week. The timing for introducing a topic may vary, and some weeks will have overflow material from the prior week. I may even skip certain sections, and if this happens, they will be delegated for extra credit reading (eg., the final material on psychiatric medications or interventions). Nonetheless, the information will come thick and fast. Therefore, please read the chapters in the textbook before you attend class. Also, be warned that lecture material will also include quite a bit of material that is not in the book (which is why attendance is important). If I do not cover material in the book, it will be assessed separately through online quizzes that will be announced in class.

Week 1 (Thursday 9/7): Introduction and Overview of the Course

Read chapters 1 and 2 in the textbook. A quiz on these chapters will be given online (on the Sakai course site). You will be able to take this on the evening of Tuesday, 9/12.

The classification of substance abuse disorders - Addiction and Dependence

The history of drug use: attitudes and legislation

Factors That Motivate Drug Use: Personality variables; the psychosocial environment

Week 2 (9/11; 9/14): Chapter 3 (Drugs and the Nervous System); Chapters 4 (Pharmacology) & 5 (Psychopharmacology)

Overview of The Nervous System: Neuroanatomy; Neurons and their organization in the brain

Home Assignment: HBO Documentary: Addiction **Part I**. This is available online on HBO.com. Questions for you to answer and discuss will be posted. You will need to submit your answers by the next class (Monday 9/8) using the assignments link on the course site in Sakai.

Week 3 (9/8; 9/21): Chapter 3 (Drugs and the Nervous System); Chapters 4 (Pharmacology) & 5 (Psychopharmacology)

Principles of drug action: Pharmacokinetics, routes of drug exposure, tolerance

Psychopharmacology – the study of how neurons communicate with each other chemically and what this means for behavior

Home Assignment: HBO Documentary: Addiction **Part II**. This is available online on HBO.com. Questions for you to answer will be posted. You will need to submit your answers by the next class (Monday 9/25) using the assignments link on the course site in Sakai.

Week 4 (9/25; 9/28): Chapter 3 (Drugs and the Nervous System); Chapters 4 (Pharmacology) & 5 (Psychopharmacology)

The brain reward system: The concept of pleasure pathways in the brain

Week 5 (10/2; 10/5): Chapter 5 (Psychopharmacology)

Finish material introduced in the previous week. Review material covered in weeks 1-3.

EXAM 1: Thursday 10/5 (this exam will cover all material up to and including Monday 10/2)

Week 6 (10/9; 10/12): Legal Stimulants – Nicotine (chapter 7) and Caffeine (chapter 8)

Origin and history of use; neurobiological and behavioral basis for ‘stimulant’ categorization; addictive properties; potential health benefits of caffeine and nicotinic receptors in the brain (cognitive enhancement)

Pathology: the long list of damaging health effects of smoking (not the way to enhance cognition!)

Home Assignment. Frontline Documentary: The Meth Epidemic. This is available online on

<http://www.pbs.org/wgbh/pages/frontline/meth/>

Questions for you to answer will be posted. You will need to submit your answers by the next class (Monday 10/16) using the assignments link on the course site in Sakai.

Week 7 (10/16; 10/19): Illegal Stimulants: Cocaine, Amphetamine and Methamphetamine (chapter 6)

Origin; neural mechanisms for stimulant effects; addictive properties; immediate and long-term effects on brain plasticity; neuroimaging studies; paradoxical use of stimulants in managing ADHD; legal and medical issues

Regular drug use and classical conditioning: when the environment for drug use induces craving

Week 8 (10/23; 10/26) Alcohol (chapter 9)

Origin; neurobiological effects; behavioral symptoms; basis for dependency; pathology and impact on society and the individual; impact on neurodevelopment

Week 9 (10/30; 11/2) Opiates (chapter 10)

Introduce the opioid system and its discovery in the brain; history of opiate use

The neurobiology of opioid systems in the brain; a natural mechanism for pain reduction; the clinical uses of opiates

Heroin trafficking and the current opiate addiction epidemic: heroin, fentanyl, prescription opiates

What can cause an overdose and death? – a consideration of conditioned tolerance effects

Home Assignment. Frontline Documentary: Chasing Heroin. This is available online on

<http://www.pbs.org/wgbh/frontline/film/chasing-heroin/>

Questions for you to answer will be posted. You will need to submit your answers by the next class (Monday 11/6) using the assignments link on the course site in Sakai.

Week 10 (11/6; 11/9) Opiates (chapter 10)

Monday 11/6: Continuation of material from Week 9

EXAM 2: Thursday 11/9 (this exam will cover all material covered from Monday 10/9 to Monday 11/6)

Week 11 (note that on Monday 11/13 there is no class – Society for Neuroscience conference; class will resume Thursday, 11/16 - Marijuana (chapter 11)

Origin and psychoactive ingredient of the cannabis plant (THC); legal and medical issues; cannabis receptors in the brain – does the brain make it's own marijuana?

Behavioral effects; role of receptors in cognition and mood regulation; relationship of cannabis effects to the opioid system in the brain

Controversies surrounding the use of cannabis; the limitations of conducting optimal research on cannabis

The potential health benefits of cannabidiol (a non-psychoactive component of cannabis): applications in treating epilepsy

Week 12 (This week we meet Monday and Tuesday: 11/20 and 11/21 – Thursday classes are on Tuesday due to the Thanksgiving holiday)

Hallucinogens - LSD; mushrooms; ecstasy (Chapter 12)

Origins and history of use; neurotransmitter actions; behavioral effects; legal and medical issues; cultural and religious practices

LSD and ketamine: two drugs receiving attention as adjuncts to psychotherapy in depressed patients

Designer Drugs: eg., ecstasy – is it safe?

Assignment: BBC documentary on ecstasy

Questions will be provided in class and will need to be submitted in the first class of the next week.

Week 13 (11/27; 11/30) Psychotherapeutic Medications (chapter 13)

Psychiatric Drugs: Antidepressants; antipsychotics; anxiolytics

Neurobiological basis of action

Placebo effects: Is the pharmaceutical industry running into problems with the therapeutic efficacy of psychiatric drugs?

Week 14 (12/4; 12/7) Non-drug addictions; Treatment of Substance Abuse (Chapter 15)

Everyday activities can be addictive: sex and food intake – the reward pathways in the brain serve these behaviors

Pathologies: gambling, sex addiction, obesity

Treatment of addictive behavior: behavioral modification procedures

Week 15 (12/11) Prevention of Substance Abuse (Chapter 16)

Models of prevention: sociocultural, proscriptive

Education, mass media, skills training

FINAL EXAM: covers Weeks 9-14