

## SYLLABUS

830:360:01

### DRUGS AND HUMAN BEHAVIOR

Spring 2019

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

#### ***PLEASE READ THIS SYLLABUS VERY CLOSELY***

*The posting of this syllabus on Sakai is confirmation that you have read this syllabus and understand the course requirements. If you tell me that you were not aware of a particular assignment or exam date, there will be no concessions, as it is all here in this document. Therefore, **DO NOT** ignore a thorough read and understanding of this syllabus. If there are any changes to the syllabus, it will be updated, and you will be alerted in class and through email to review the changes.*

*A similar discipline should be applied to email messages. Every single email that you receive must be read in full – whether it is from the instructor (Professor Kusnecov) or the teaching assistant (Marialaina Nissenbaum). If you do not read them, and they contain critical information, you will penalize yourself (eg., miss a rescheduled quiz or reading assignment). Emails arrive either as an announcement (which will also be stored on the course sakai site – so check periodically) or using the mailtool program in sakai.*

#### Instructor:

Alexander Kusnecov, Ph.D.

Professor, Dept. Psychology, Busch Campus

Email: [kusnecov@psych.rutgers.edu](mailto:kusnecov@psych.rutgers.edu)

Phone: (848) 445 3473

Office Hours: Wed 10:30 - 11:30

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

#### **Directions to Professor Kusnecov's office on Busch Campus**

Come into the Psychology building from the Allison Road end. Walk 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 black double door. You will then find yourself in a long hall (which is the 2<sup>nd</sup> floor of the bldg.). My office will be a few doors on your right (opposite my office is my lab, Room 232; it has an orange door and yellow 'caution' signs). Note: there is another room 233 at the opposite end of the building in the Graduate School of Applied Psychology (GSAPP). Not me!

#### Teaching Assistant:

Marialaina Nissenbaum, Graduate Student in Behavioral & Systems Neuroscience

Dept. Psychology, Busch Campus

Email: [mn593@scarletmail.rutgers.edu](mailto:mn593@scarletmail.rutgers.edu)

Office Hours: Thursday 2-3

Office Location: Room 232a (you will find this office inside Professor Kusnecov's laboratory – see above directions to his office)

### **How to use office hours**

The goal of office hours is *clarification* – not a repeat of a missed lecture or large segments of a lecture. After exams, students concerned about their performance are urged to look at their scantrons. **DO THIS INITIALLY WITH MARIALAINA.** My time is best used to provide you with clarification and additional information you may need to know – but if this relates to the exam, you first need to identify your problem areas. If Marialaina cannot explain why your answers are off base, she will ask you to see me. It then will be your responsibility to contact me.

Email correspondence is acceptable at any time (but I may not respond promptly – in some cases, it may take 24 hours). Also note that questions which require extended email responses will necessitate a face-to-face meeting – so plan to see Marialaina or myself if you need detailed responses.

### **Course Synopsis**

The consumption of chemical substances has long preoccupied humans due to curiosity, as well as the natural craving for pleasure, happiness, unique experiences, and in some cases, 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 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.

### **Important health-related information about this course**

You will be required to watch documentaries in which people use drugs and suffer because of drugs. If this makes you uncomfortable, you should reassess whether you should take this course. In a class based on drug use and the science underlying the information presented, there is always the risk that some people will experience (i) anxieties and concerns triggered by past and/or current experience, and/or (ii) the emergence of ideas that result in a reassessment of current and/or future use of physician-prescribed medication. Since this course began - many years ago - I have received a consistent stream of questions and concerns from students, some asking for advice, some wanting clarification, and some simply wanting to talk. This course is not prescriptive (telling you what you should do) nor is it proscriptive (telling you what you should not do - within reason, of course, as I would not want anyone experimenting with dangerous drugs, and this course tells you why). Given that this is academia, you learn about what has been studied and discovered, and what is still to be fully known. It does not mean that you should act on any of this information. As with anything you do in life, exercise commonsense and/or seek the advice of trained health professionals.

**Therefore, if you are on prescription medication, for whatever reason, you should not abandon use of your medication without consulting your physician. And if you are experiencing unpleasant feelings because of past drug abuse, the university has counseling centers that can assist with this. In fact, whatever personal health concerns a course triggers, please consult this website:**  
<http://health.rutgers.edu/>

## **Learning Goals**

At least 50% of 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 tell you only what you need to know. The textbook provides a superficial introduction to the nervous system, which will help. My role is to expand on this information as it pertains to explaining why drugs do what they do, and to integrate this with the following 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 (this is required):**

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

**Handouts** for the powerpoint lectures will be posted on sakai prior to class.

## **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)

**GROUND RULES (maintain decorum, and avoid 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 often.
- (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. If you cannot get seating in the back rows, you cannot use a laptop further up front. No exceptions.*

*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 – and we all know this happens. When I have observed the lectures of my colleagues, I sit at the back, and it’s astounding how few laptop-using students are actually scrolling through the lecture slides.

Since 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), **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 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 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, my own data has proven that 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 . . . ). The data were objective: they simply did better. If for some reason you cannot use a pen, and must use a laptop (in the back rows), stick to taking notes (i.e. turn off wifi access).

**STUDY ADVICE: MAINTAIN ACTIVE LEARNING:** Film director Woody Allen once said: *80% 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 modern technology and 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 that is not the exam, 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 (But 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 (70% 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, 20% of total grade; Final Exam 30% of your total grade. The Final Exam is not cumulative.

Assignments (30% of total grade: 20% for reading; 10% for documentaries)

The assignments will consist of the following.

- (i) Reading assigned chapters in the textbook and answering online quizzes based on the chapters – these quizzes will occur each week (except for Week 2, most of these will be given each week on WEDNESDAY at 5PM AND AVAILABLE FOR 24 HRS) – some of your reading also gets tested in exams; for chapter quizzes, you will be allowed to drop your lowest two quiz scores (which means you can afford to skip two quizzes, although this is not advisable).
- (ii) Viewing documentary films and answering online quizzes based on these films. **YOU MUST DO ALL QUIZZES FOR THE DOCUMENTARIES. IF YOU SKIP A DOCUMENTARY QUIZ, YOU WILL LOSE 2.5% POINTS PER SKIPPED QUIZ.** You will be provided with probe questions in advance to allow you to know what information you need to listen/look for prior to the quiz on each documentary. 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, and provide a wider context to the more specific information learned in class. Some of the information in the documentaries may be tested in the exams.

Extra Credit. I will assign chapter 12 (Hallucinogens) as extra credit reading for the final. Questions on this chapter will be extra credit, and will represent additional percentage points to be applied once you have earned the 100% from the exams and assignments. Some cumulative material will be examined for extra credit (i.e. from Exams 1 and 2). The percentage value of the extra credit will be determined at the time the Final Exam is administered.

## 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 the exam is missed for a legitimate and verifiable reason, the student must sit for the makeup within three weekdays 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 means that you will forfeit the points that would have been earned in that exam. Contact the TA as to when she can administer the makeup. **A makeup can only be taken with the professor’s permission.**

After seeing the schedule below, if you anticipate a conflict, you have the option of taking an exam EARLIER than the scheduled time (not later). Legitimate reasons for this are: Rutgers athletic obligations (confirmation by your director is required), 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 do not take the exam, then you will fail to receive any points.

### *Online Quizzes*

Where it is stated that quizzes and other material are posted online, this refers to the Sakai course site. On the left side of the Sakai course site will be a link to Tests and Quizzes.

Dates and times for quizzes are given in the schedule below. You will also be notified by email using the ‘announcements’ tool on Sakai, and I will also remind you in class. If an assigned quiz time changes (eg., due to technical difficulties at our end or Sakai is down), you will be notified by email and/or during class time.

**Once a quiz is posted, you will have 24 hours to start and complete the quiz. Once you start a quiz, you cannot stop, log out and expect to come back to the quiz.** You must complete the quiz in the allotted time (which will typically be 40 minutes). Save your answers as you move along.

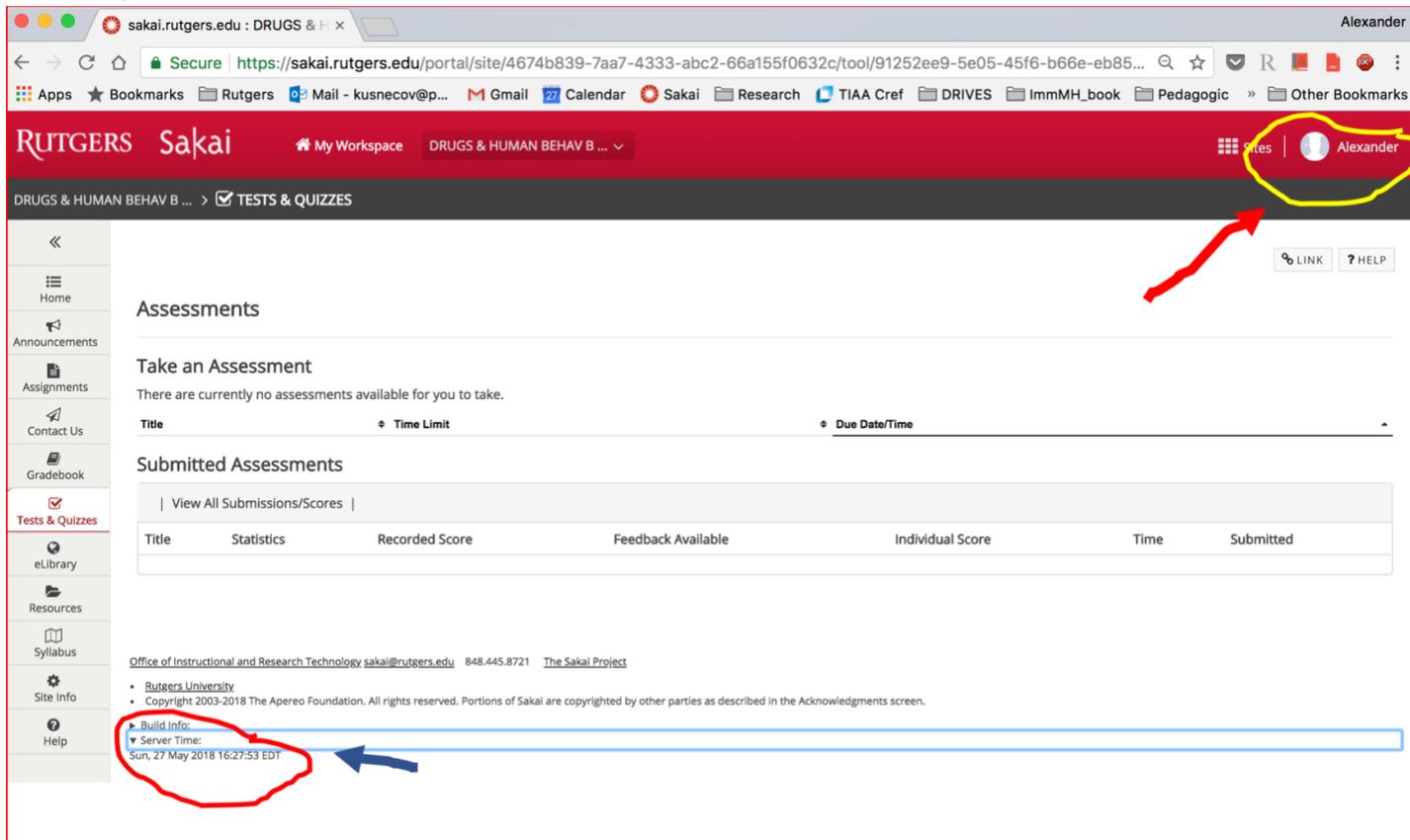
Reports of technical trouble in taking a quiz or exam (eg., browser not showing the quiz) needs to be reported to me or the TA immediately, and during the period when the quiz or exam is active (eg., if the quiz is active 5pm on a given date, you have to report problems within 24 hours, before the quiz closes).

There are no makeups for quizzes, since you are given advance warning when the quiz is going live, and should be prepared. Moreover, you will be allowed to drop your lowest two quiz scores (which basically means you are allowed to skip two quizzes – but if it were me, I’d avoid this option). Of course, if there are medical emergencies or religious obligations (note that if these affect a portion of the 24 hour period, you will still need to take the quiz), we can discuss alternative arrangements.

### **IMPORTANT: What you must do when you have a technical problem:**

1. Firstly, if you suspect a poor connection wherever you live, go to the computer labs and/or terminals in the many libraries we have at Rutgers, NB. Any problems taking a quiz will very likely be addressed by the staff at the library. They are also witnesses to the problem. If you are well away from campus, go to a local library.
2. If you do not see an active quiz or exam displayed, take a screenshot of the browser page, after you have clicked on the ‘Tests and Quizzes’ link. Email this screenshot to me (see example below). The screenshot should show your ID/NAME in the top right corner, and there should be a time stamp.

3. In the example below, note the two arrows top right and bottom left. These are showing your name (top right) and the time signature (bottom left). When you take the screenshot, you **MUST HAVE** the information pointed out by these arrows **SHOWING SIMULTANEOUSLY** (as in the example below). **If I do not see both pieces of information, it will not be a legitimate report and I will not consider your problem as being legitimate.** If the browser is not showing both, reduce the browser window size [hold down ctrl and press the minus (-) key; or on a mac, hold down the command key and press the minus key].



4. To reveal the time signature, scroll to the bottom of the browser page and click the arrow next to 'Server Time.' This will reveal the current time, and the screenshot should simultaneously show your ID and this time stamp (that top right arrow).
5. Also email the screenshot and a report of your difficulty to [sakai@rutgers.edu](mailto:sakai@rutgers.edu) and make sure you explain the problem. When you email them, make sure to copy me and/or the TA.

Ways that we can verify if your problem is real. I have myself listed in the roster as a student (not instructor), so I will see what you will see, and Marialaina, the TA, will also see what you can see, as she will also be listed as a student, and operating from a completely different location. Sakai shows you what is on a server and once logged in (like everyone else), you will see what other students see. Therefore, if you tell me you don't see a quiz, while the rest of the class, including myself, can see it, then you are either not logged in, or extremely

unlucky (which, quite frankly, won't be possible, if you are logged in). We are also able to activate a 'student view' link, to provide an additional perspective.

Browsers. All major browsers will work. Chrome, Firefox, Safari, Explorer – they're all good. If there are problems with any of these browsers during the course (eg., when viewing videos), update or reinstall your browsers and make sure any restrictions are removed. However, that should be rare, since all videos will be watched through the library link (eLibrary) that I have provided.

## 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. 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 content will include substantial material that is not in the book (so attendance is critical if you wish to do well).

### *Week 1 (Thursday 1/24): Introduction and Overview of the Course*

Read Chapters 1 and 2 in the textbook. A quiz on these chapters will be given online on Thursday in week 2 (on the Sakai course site). The quiz will be available until Friday 3 pm. (see week 2 information)

Watch **HBO documentary 'Addiction.'** Probe questions are available in resources on the sakai site (online quiz given at 9am Sunday, 2/3, and will be available until 9 am Monday, 2/4)

### *Week 2 (1/28, 1/31): Factors that motivate drug use; Introduction to the nervous system*

*Factors That Motivate Drug Use:* Personality variables; the psychosocial environment; are we wired to try stuff? *Begin Overview of The Nervous System:* Neuroanatomy; Neurons and their organization in the brain

Chapter Quiz Thursday (1/31) 9 am: Quiz on Chapters 1 and 2. Available until 3 pm Friday, 2/1.

Documentary Quiz 1 Sunday (2/3) 9am: Quiz on HBO documentary 'Addiction.' Quiz will be available 24 hrs until Monday (2/4) 9 am.

### *Week 3 (2/4, 2/7): Chapter 3 (Drugs and the Nervous System); Chapters 4 (Pharmacology) & 5 (Psychopharmacology)*

Continue Overview of The Nervous System: Neuroanatomy; Neurons and their organization in the brain; Psychopharmacology – the study of how neurons communicate with each other chemically and what this means for behavior

Chapter Quiz Wed (2/6) 5pm: Quiz on Chapter 3. Available 24 hrs.

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

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

Chapter Quiz, Wed (2/13) 5pm: Quiz on Chapter 4. Available 24 hrs.

**Week 5 (2/18, 2/21):** Chapter 5 (Psychopharmacology)

Finish material introduced in the previous week.

Chapter Quiz, Wed (2/20) 5pm: Quiz on Chapter 5. Available 24 hrs.

**Week 6 (2/25, 2/28):** Exam 1; Legal Stimulants – Nicotine (chapter 7) and Caffeine (chapter 8)

**EXAM 1: Monday 2/25 (this exam will cover all material up to and including Thursday 2/24)**

**Thursday 2/28:** Begin discussion of stimulants. 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!)

Chapter Quiz Wed (2/27) 5pm: Quiz on Chapters 7 and 8. Available 48 hrs until Friday 5pm.

Watch **Frontline documentary:** Meth Epidemic (online quiz next Thursday, Week 7); probe questions will be provided.

**Week 7 (3/4, 3/7)** Finish Legal Stimulants (chapters 7 and 8); Illegal Stimulants (Chapter 6)

Discuss Cocaine and Amphetamine; 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

Chapter Quiz Wed (3/6) 5pm: Quiz on Chapter 6. Available 24 hrs.

Documentary Quiz 2 Thursday (3/7) 5 pm: Quiz on Frontline documentary ‘Meth Epidemic.’ Quiz will be available 24 hrs until Friday (3/8) 5pm.

**Week 8 (3/11, 3/14):** Continue Illegal Stimulants: Cocaine, Amphetamine and Methamphetamine (chapter 6)

Start reading chapter 9 on alcohol (quiz given first week [week 9] after spring break)

No quizzes this week. Start watching the two Opioid Documentaries (Frontline Documentary ‘Chasing Heroin’; HBO documentary ‘Cape Cod’) – combined, this is well over 3 hours of viewing. Probe questions will be provided.

**SPRING BREAK: Monday 3/18 – Friday 3/22**

**Week 9 (3/25, 3/28): Illegal Stimulants Continued; Discuss Stress and Relapse**

Discuss the neurobiology of stress and how it contributes to craving and relapse

Chapter Quiz Wed (3/27) 5pm: Quiz on Chapter 9 (alcohol). Available 24 hrs.

**Week 10 (4/1, 4/4) Alcohol (Chapter 9)**

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

*No quizzes this week. Watch Chasing Heroin and Cape Cod documentaries (if you haven't started).*

**Week 11 (4/8, 4/11): Exam 2 and Begin Opiates (chapter 10)**

**EXAM 2 (Monday 4/8): This will cover all material between Exam 1 and the lecture on Thurs 4/4**

Lecture on Thurs 4/11: Introduce the opioid system and its discovery in the brain; history of opiate use.

Documentary Quiz 3 Thursday (4/11) 5 pm: Based on Chasing Heroin and Cape Cod (HBO doc). Quiz is available 24 hrs until Friday (4/12) 5 pm.

**Week 12 (4/15, 4/18)**

Opiates (continued): 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

Chapter Quiz Wed (4/17) 5pm: Quiz on Chapter 10 (opiates). Available 24 hrs.

**Week 13 (4/22, 4/25): 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.

Chapter Quiz Wed (4/24) 5pm: Quiz on Chapter 11. Available 24 hrs.

Watch *Documentary on ecstasy*. Probe material will be posted. Quiz will be given next week (week 14).

**Week 14 (4/29, 5/2) Finish Marijuana (chapter 11); Psychiatric Medications (chapter 13)**

Finish Marijuana; Begin discussion of psychiatric medications

Chapter Quiz Wed (5/1) 5pm: Quiz on Chapter 13 (Psychiatric Medications). Available 24 hrs.

Documentary Quiz 4, Thursday (5/3) 5 pm: *Ecstasy documentary*. Available until Friday (5/4) 5 pm.

**Week 15 (5/6) Final lecture, Psychiatric Medications (Chapter 13)**

**FINAL EXAM (30% of grade): TBD**

**Extra credit reading: Chapter 12 (hallucinogens) – extra credit questions will be asked in the final exam**