

USC School of Pharmacy

RXRS 405: Pharmacology and Sociology of Drug Abuse (Buzzed: From Breaking Bad to Doing Good)

Instructors:

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Office Location & Office Hours: (TBA)

Course Weight: 4 Units (course meets 3 hours per week – one three hour session or two 1.5 hour sessions; plus 1 discussion section session)

Days/Time/Location: Tuesday, Thursday: 11:00 am to 12:20 am, VKC 205

Introduction

Drug abuse is an “equal-opportunity affliction.” Historically, probably since the beginning of time, humans have sought out or discovered by accident compounds that have medicinal as well as hedonic effects. ***ADDICTION: the compulsive using of drugs in spite of terrible consequences.*** As a society, the consequences of improper drug use has also been recognized and attempts to regulate its use is found in the literature going back as far as 2240 B.C.. Unfortunately, what is not widely recognized is that the use of legal drugs including alcohol and tobacco cause far more deaths, sickness, violent crimes, economic loss and other social problems compared to the use of all illegal drugs combined. This course will consider the benefits and consequences of drug use (legal and illegal). The mechanism(s) of action and therapies for drugs of abuse will also presented.

Objectives

This course is designed for upper-level undergraduates of both scientific and non-scientific majors with an interest in learning about current trends that mark today’s drug climate as they explore the social,

psychological, economical and biological reasons why drug use and abuse occur. For example, the incidence of alcohol abuse in college students is significantly higher as compared to their aged matched peers. Students will also learn about current pharmacotherapies/treatments (or lack of) for individuals suffering from a substance use disorder. Timely topics will be discussed such as the relationship between the increased illegal use of prescription opioids and the rising increase in accidental opioid overdose deaths. Differences in treatment philosophies will be presented that are designed to lead to lively discussions during class. For example, the effectiveness of Alcohol Anonymous (AA; www.aa.org) vs other available therapies for the individual suffering from an alcohol use disorder. Students will also be introduced to the roles of different health care professionals, members of the pharmaceutical and biotechnology industry and academic scientists whom will give their individual perspectives on drug treatment strategies from their individual perspectives. Chapters from the core textbook will be supplemented with a variety of source materials including online resources and articles from scientific journals. This course should have broad appeal to many USC undergraduates including Pre-Pharmacy, Pre-Medicine and other health and life science majors as well as students in biomedical engineering, psychology, business, international studies, law and sociology.

Upon successful completion of this course you should be able to demonstrate a working knowledge of:

- The principles of drug abuse; trends and statistics; differing commonly abused drug groups
- The differing biochemical mechanisms of drug action for commonly abused drugs
- The latest biological, psychological, social-psychological, and sociological perspectives related to drug use and abuse
- The consequences of improper drug use and abuse and its relationship to health, economy, wellbeing and society.
- The signs and symptoms of drug abuse; why it is important
- Drug abuse prevention and treatment strategies; utilization of drugs/medications for the drug dependent individual
- The challenges in developing effective medications for addicted individuals
- The challenges of in-patient and outpatient therapies; what is available for the patient.
- The societal challenges and perceptions related to a drug addict versus someone diagnosed with cancer.

Evaluation and Grading:

Evaluation will be based on two midterm examinations, a final examination, course quizzes and class participation.

Class participation:	20 pts	(10%)
3 quizzes @ 10 pts each	30 pts	(15%)
2 written assignments @ 10 each:	20 pts	(10%)
2 midterm exams @ 35 pts each:	70 pts	(35%)
1 final exam (partially cumulative):	<u>60 pts</u>	(30%)
Total:	200 pts.	

Class Participation and Attendance: Attendance at all classes is expected. Participation will include asking and answering questions and being actively engaged in the discussion. It is expected that students read the assigned papers prior to the lecture and be prepared to discuss background, current

understanding, treatments, and gaps in knowledge for the topic in each lecture.

There will be 3 quizzes over the course of the semester that will primarily be based on questions pulled from the text book. There will be 2 short written assignments – 1 page maximum, single space on topics selected by the student within the context of the material presented in class. The midterms (35 points each) will include multiple choice and T/F questions as well as a series of questions involving short answers.

The final exam (60 points) will include multiple choice and T/F questions as well as a series of questions involving short answers. The final exam will be cumulative, but will emphasize material covered after the 2nd midterm.

There are no make-up exams. If exceptional circumstances prevent you from attending an exam, your reason for missing it must be accompanied by a written statement from a third party (e.g. a note from a medical doctor).

Notes, books, calculators, electronic dictionaries, regular dictionaries, cell phones or any other aids are not allowed during exams.

Students will be asked to complete an anonymous critical evaluation of the course at its completion.

Course Readings

Required Readings

The text is mandatory for this course as it will greatly improve your grasp on the course content. There is a supplemental online student companion website for this course that can be accessed once the textbook is purchased. You will be able to use identified chapters in the text to support your learning process throughout the semester.

Drugs and Society by [Hanson, Glen R., Ph.D.](#); [Venturelli, Peter J.](#); [Fleckenstein, Annette E., Ph.D.](#)

Edition: 13th **ISBN13:** 978-1284110876 **ISBN10:** 1284110877

Format: Paperback w/ Access Code

Pub. Date: 2018

Publisher(s): Jones & Bartlett Learning

- Bethany Brookshire. “Caffeine gives cocaine an addictive boost.” *Psychology, Science & Society, Neuroscience*, November 17, 2015. <https://www.sciencenews.org/blog/scicurious/caffeine-gives-cocaine-addictive-boost>
- Ryan Bushey, Associate Editor. *CVS Sells Heroin Overdose Antidote OTC in 14 States*. 9/25/2015. <http://www.ddmag.com/news/2015/09/cvs-sells-heroin-overdose-antidote-otc-14-states>
- Gabrielle Glaser. “The Irrationality of Alcoholics Anonymous.” *The Atlantic*. April 2015. <http://www.theatlantic.com/magazine/archive/2015/04/the-irrationality-of-alcoholics-anonymous/386255/>
- John F. Kelley and Gene Beresin. “In Defense of 12 Steps: What Science Really Tells us About Addiction.” *Common Health*. April 7, 2014. <http://commonhealth.wbur.org/2014/04/defense-12-step-addiction>
- National Institute on Drug Abuse. *Commonly Abused Drugs*. August 2015.

https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/commonly_abused_drugs_august_2015.pdf

- National Institute on Drug Abuse. *Drugs, Brains, and Behavior. The Science of Addiction*. April 2007. https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/soa_2014.pdf

Extensive background information on Drug and Alcohol abuse is freely available on line from the National Institutes of Health.

- Alcohol Awareness Council
<http://www.alcohol.org/>

Two additional sites that students may find interesting:

National Institute on Drug Abuse: <http://www.drugabuse.gov/drugs-abuse>

National Institute on Alcohol Abuse and Alcoholism: <http://www.niaaa.nih.gov/>

Other topical materials including but not limited to the syllabus, supplemental reading assignments and additional handouts will be posted on <http://blackboard.usc.edu/>. The students will also be encouraged to use the online discussions among students via Blackboard.

Course Outline

This course will be in the format of a directed seminar/lecture under the guidance of the instructor for the specific session. During each weekly session the instructor will engage the students with questions and draw comments or interpretations primarily based on the assigned reading. Students are expected to ask questions and participate in an interactive fashion. Because this is an area of rapid change in policies, the readings may vary from one term to the next. Additional readings for each section that may be of added use are listed in the table below.

Course schedule is as follows:

Dates	Topic	Included Subtopics Assigned and Supplemental Reading/Watching	Lecturer
Week 1 Aug. 27, 29	Introduction: General overview of drug use, abuse and drug addiction.	<p>Historical perspective of drug abuse; who and why of getting buzzed; most commonly abused drugs; drug use spread – frequency and extent, patterns, demographics, trends, costs to society.</p> <p>Basic understanding of drug abuse – drug use and dependence; addiction cycle, theoretical explanations.</p> <p>Drugs & Society, Chapters 1,2</p> <p>Readings: “Drugs, Brains, and Behavior NIDA.” “National Institute on Drug Abuse. <i>Commonly Abused Drugs</i>. August 2015.” Utube presentation in class: “Addiction: learning to forget.” https://www.youtube.com/watch?feature=player_embedded&v=t7Dsg1ZObFo</p>	Asatryan
Week 2 Sept. 3, 5	Homeostatic systems and drugs	<p>Overview of the nervous systems; drug receptors; brain circuitry; the reward pathway; the dark side of addiction. The endocrine system – glands, regulation, abuse of hormones.</p> <p>Drugs & Society, Chapter 4</p> <p>Required watching to prepare for week two lecture: Utube “Brain Reward: Understanding How the Brain Responds to Natural Rewards and Drugs of Abuse.” https://youtu.be/7VUIKP4LDyQ_or https://www.youtube.com/watch?v=7VUIKP4LDyQ</p>	Asatryan
Week 3 Sept. 10, 12	How and why drugs work? Quiz #1 - Sept 12	<p>Dose, dose-response; potency; Pharmacodynamics - what the drug does to the body (pd); Pharmacokinetics - what the body does to the drug (pk); zero vs first order kinetics;</p> <p>Drugs & Society, Chapter 5</p>	Asatryan
Week 4 Sept. 17, 19	How and why drugs work? (Continued) CNS depressants – short overview Alcohol as a drug and it’s pharmacological effects	<p>Drug metabolism, bioavailability; drug interactions; tolerance; withdrawal, rebound, dependency.</p> <p>Drugs & Society, Chapter 5</p> <p>Commonly used and abused depressant drugs; treatment strategies; abuse of short acting IV general anesthetics.</p> <p>History; chemistry; properties of alcohol; metabolism; effects on organ systems; fetal alcohol syndrome; interaction with other drugs; alcohol abuse – CNS actions</p> <p>Drugs & Society, Chapters 6,7</p> <p>Cherry Healey – Old Before My Time – Alcohol Documentary: https://www.youtube.com/watch?v=v6vEe6eenpg&nohtml5=False</p>	Asatryan
Week 5 Sept. 24	Alcohol: Behavioral effects	<p>Cost of alcohol abuse to society; genes vs environment; males vs females; college drinking; cultural influences History; chemistry; properties of alcohol; alcohol use disorder, withdrawal</p> <p>Drugs & Society, Chapters 7,8</p> <p>HBO documentary: Risky Drinking: (recommended watching with 3D glasses) https://www.youtube.com/watch?v=cprFGtvi2Rg Utube video – “Alcohol and your Brain.” https://youtu.be/zXjANz9r5F0</p>	Asatryan
Week 5 Sept. 26	In Class Midterm 1		
Weeks 6-7 Oct. 1,3,8	Narcotics: Opioids and abuse	History of narcotics; pharmacological effects; therapeutic uses; the good and the bad Abuse, tolerance, dependence, withdrawal. Opioid overdose emergency treatments; resurgence of heroin; methadone clinics.	Jakowec

		Drugs & Society, Chapter 9 Reading: "CVS Sells Heroin Overdose Antidote OTC in 14 States." The Science of Opioids: https://www.youtube.com/watch?v=AqDo4LiKz-c Opioid overdose: https://www.youtube.com/watch?v=pROfg1vOp4w Treatment options for Opioid addiction: https://www.youtube.com/watch?v=Ptokjgt2j3Y	
Week 7 Oct. 10	Stimulants Quiz #2 – Oct 10	Introduction to stimulants - legal and illegal; case histories, energy drinks; caffeine; alcohol Drugs & Society, Chapters 10, 12 Reading: "Caffeine gives cocaine an addictive boost."	Jakowec
Week 8 Oct 15	Hallucinogens (Psychedelics)	Haigh Asbury; mechanisms of action; Case Histories – Psychological effects	Jakowec
Week 8	Oct 17	Fall Recess	
Week 9 Oct. 22, 24	Tobacco Written Assignment #1 Due Oct 22	Tobacco use; history; pharmacology of nicotine; smoking and health issues Tobacco use and exposure without smoking; smoking prohibition Drugs & Society, Chapter 11	Jakowec
Week 10 Oct. 29	In Class Midterm 2		
Week 10 Oct. 31	Inhalants OTC, prescription and herbal drugs	History and types of inhalants; current pattern of use; abuse and dangers; Types and abuse of OTC drugs; prescription drugs and abuse; herbals Drugs & Society, Chapter 14,15	Jakowec
Weeks 11-12 Nov. 5,7, 12	Marijuana	Low vs High doses of marijuana; medical use of marijuana; marijuana and societal beliefs; trends and health issues. Legal vs illegal marijuana; the controversy continues Drugs & Society, Chapters 13	Jakowec
Week 12 Nov. 14	Drug use in subcultures of special populations Drug abuse prevention	Drugs and the student athlete; underage drug use – consequences on CNS development; Drug use on college campuses; purchasing drugs on the internet Prevention programs – key findings; community- and family-based programs; large-scale programs; programs in higher education Drugs & Society, Chapters 16, 17 Utube viewing assignment on "Addiction Relapse Prevention Strategies." https://youtu.be/bYTp8hpSJjY	Jakowec
Week 13 Nov. 19, 21	Drug abuse treatment Quiz #3 – Nov. 19	Treatment of addiction; principles of treatment; therapeutic strategies; behavioral strategies; pharmacological strategies; mindfulness therapy Drugs & Society, Chapters 18-19 Mindfulness Therapy: Can it help? https://www.youtube.com/watch?v=-moW9jvMr4	Jakowec/ Davies
Week 14 Nov 26	Alcohol pharmacotherapy development	Example of a drug discovery program by a USC faculty to develop pharmacotherapies for AUD	Asatryan
Nov 27-29 Thanksgiving Recess			
Week 15 Dec. 3, 5	Alcohol Rehabilitation Strategies Written assignment #2 due Dec 3	How I overcame alcoholism Claudia Christian TEDxLondonBusinessSchool https://www.youtube.com/watch?v=6EghiY_s2ts Selected readings: 1) "The Irrationality of Alcoholics Anonymous." 2) "In Defense of 12 steps." 3) Beacon House – San Pedro	Davies
Dec. 17	In Class Final Exam		

8 – 10 am

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call

engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call

engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421

studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.