**NROSCI 0081: Drugs and Behavior**

**Instructor:** Sara E. Morrison, Ph.D.

 sara.morrison@pitt.edu

**Lectures:** Monday/Wednesday/Friday 10:00-10:50 am

 L9 Clapp Hall

**Office hours:** Tues. 3:30-4:45 pm, Fri. 11:00 am -12:00 pm, and by appointment

 A451 Langley Hall (on the bridge between Langley and Clapp)

**Graduate TA:** Sara Springer

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 Sophie Rubin Carlo Vignali

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**Recitation:** Mondays 11:00 am - 12:00 pm, **Crawford 241**

 Led by Sara Springer

**TA office hours:** TBA

Note that recitation is optional, but recommended, especially if you have questions about the material covered in class that week. In addition, the TAs will be posting a weekly review sheet on Courseweb.

**Course objectives:**

In this course, we will take an interactive tour of the brain, exploring the cellular and molecular mechanisms behind “normal” and drug-influenced modes of behavior. Students in this class will learn how cells in the brain communicate and how specific substances change this communication to cause stimulation, intoxication, distortion, or relaxation. We will discuss how drug effects fall into overarching categories and how drugs within a category are similar and how they differ. You will learn how the government classifies drugs for legal purposes and debate whether that classification is appropriate for specific drugs based on the available scientific evidence. Finally, you will improve your ability to interpret scientific data presented in graph format, understand science writing, and think critically about scientific statements made in the media or by friends and family.

**Textbook:** Students are not required to purchase a textbook for this course. All of the required material will be presented in lecture and can be studied from the lecture slides. However, much of the course material will draw upon the following textbook:

Meyer, J.F., and Quenzer, L.F. *Psychopharmacology: Drugs, the Brain, and Behavior*, 3rd edition. Sinauer Associates, 2018. ISBN: 978-1605355559.

Therefore, purchasing or renting the book (or even an earlier edition) may be helpful to you as a study aid. For your convenience, several copies of the book will be made available on reserve at the Langley library.

**E-resources:**

We will be using the TopHat app (join code: 653153) to facilitate class participation using the “Question” function. TopHat is free for students, and can be accessed using any web-enabled device (phone is preferred) or via SMS texts in offline mode. If you do not have such a device, please contact the professor or a TA so we can make other arrangements.

In addition, the class website on Courseweb will be used for quizzes, for submitting homework assignments, and for posting announcements and fun extras. Furthermore, skeletonized Powerpoint slides will be made available on Courseweb prior to each lecture. (The full slides will also be posted after the lecture.) We request that you take notes on these printed-out slides or other paper and do not use a laptop or phone except for answering TopHat questions. If you have a disability that requires the use of a laptop, please contact the professor or a TA so we can make an exception.

**Exams:**

There will be three unit exams, which will not be cumulative, as well as a cumulative final exam. The lowest exam grade of the four will be dropped. (So, yes, if you are 100% happy with your three unit exam grades, you can skip the final.) All resources (books, notes, phones, laptops) must be put away during the exam. All material tested on the exams will be presented in lecture and/or available on the online lecture slides. Conversely, all material presented in lecture is considered testable unless otherwise indicated, even if it is not explicitly written on the lecture slides. No material from the textbook that is not presented in lecture will be on the exam.

Graded exams will be available in office hours and at recitation for your perusal. If you think a mistake was made in grading your exam, you can submit a written explanation of why you think you deserve more points, and your exam will be re-graded. Regrade requests must be made within one week of the graded exam being made available. Keep in mind that I may re-grade the entire exam in addition to the disputed question and add or subtract points.

Missed exam policy: If you have a planned absence on the day of an exam, such as an interview, a court appearance, or an off-campus activity sponsored by the University, you must arrange with Dr. Morrison to take the exam early with at least one week’s notice. Make-up exams will only be allowed in the event of serious illness or family emergency, in which case you must notify Dr. Morrison of the crisis before the exam. If you miss an exam due to oversleeping or because you are stuck in traffic, for example, that can be the exam you drop. Note that you will still be tested on the material because the final exam is cumulative.

**Quizzes:**

Quizzes are designed to assess your comprehension of the material in between exams. There will be five quizzes, of which the one with the lowest grade will be dropped. Quizzes will be taken online using Courseweb, where they will be open for three days before they are due. They are open-book and open-note, but they are expected to be taken individually. Because you have three days to take each quiz, there will be no make-up quizzes, regardless of the reason.

**Attendance:**

You are STRONGLY encouraged to attend all classes. Lecture slides will be made available following the class, but in addition to lecture, class time will be used to discuss future plans for the class, revisit tricky concepts from previous classes, quizzes, or exams, and answer your burning questions about drugs and brains. In addition, you will gain a deeper understanding of the material via in-class activities and discussions. Finally, you will earn in-class participation points for extra credit by answering questions using TopHat.

**Homework and writing assignment:**

In order to deepen your understanding of the material, there will be two homework activities that you will complete individually and we will discuss in class. One involves creating a concept map of ways in which neurons communicate. The second involves drawing a prototypical synapse and labeling targets of drug action. You will have about 1 week to complete each activity.

In addition, there will be a short writing assignment in which you will describe and critique a representation of drug use/abuse in the popular media. The assignment will be introduced in class and we will discuss approaches and examples. You will have about 2 weeks to complete the assignment.

**Grade breakdown:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Points** | **Dropped grades** | **Points applied to final grade** |
| Quizzes | 30 points each | Drop 1 out of 5 | 120 |
| Exams | 100 points each | Drop 1 out of 4 | 300 |
| Homework | 15 points each | None | 30 |
| Writing assignment | 50 points | None | 50 |
| **TOTAL** |  |  | **500** |
| Class participation (extra credit) | Up to 20 points |  |  |

**Grading:**

Keep in mind that this class, like most college STEM classes, is difficult for many students, and it is normal for raw scores on exams to appear low. Grades on individual exams will be curved using a linear transformation that takes into account the mean score and variance; thus, your exam score can increase but never decrease after the curve is applied. Final grades will be based on the percentage of total points earned and will not be further curved (e.g., if everyone in the class earns 92.5% or more of total possible points, everyone will get an A). Please be assured that anybody who completes all the work for the class will not fail.

**Academic Integrity Policy:**

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam, or paper will be imposed. (For the full Academic Integrity policy, go to www.provost.pitt.edu/info/ai1.html.)

**Disability Services:**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890 / (412) 383-3346 (fax), as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.

**Email Communication Policy:**

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. To forward e-mail sent to your University account, go to http://accounts.pitt.edu, log into your account, click on Edit Forwarding Addresses, and follow the instructions on the page. Be sure to log out of your account when you have finished. (For the full E-mail Communication Policy, go to www.bc.pitt.edu/policies/policy/09/09-10-01.html.)

**Class schedule**

Please keep in mind that the exact schedule of topics and associated readings is subject to change. If we find it necessary to reschedule the date for an exam or the due date for a quiz or assignment (only to a later date, never earlier), we will give as much notice as possible.

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Topic(s)** | **Reading in Meyer & Quenzer** | **Graded work** |
| 1/6, M | Introduction  |  |  |
| 1/8, W | How and why we study drugs, the brain, and behavior |  |  |
| 1/10, F | Anatomy of the nervous system | Ch. 2 |  |
| 1/13, M |
| 1/15, W |  |
| 1/17, F | Cells of the nervous system | Ch. 2 |  |
| 1/20, M | NO CLASS, MLK Day |
| 1/22, W | Neurophysiology: electrical properties of neurons | Ch. 2,3 | Quiz 1 due 1/22 |
| 1/24, F |
| 1/27, M | The synapse and neurotransmitters | Ch. 3, 5-8 | Homework 1 due 1/31 |
| 1/29, W |
| 1/31, F |
| 2/3, M | Wrap-up / Review of Unit 1 |  |  |
| 2/5, W | EXAM #1 |  |  |
| 2/7, F | Principles of psychopharmacology | Ch. 1 |  |
| 2/10, M |
| 2/12, W | Drug abuse and addiction | Ch. 9 |  |
| 2/14, F |
| 2/17, M | Psychostimulants: cocaine, amphetamines, and … Ritalin? | Ch. 12 | Quiz 2 due 2/17 |
| 2/19, W |
| 2/21, F | Nicotine and tobacco | Ch. 13 | Homework 2 due 2/24 |
| 2/24, M |
| 2/26, W | Alcohol | Ch. 10 | Quiz 3 due 2/28 |
| 2/28, F |
| 3/2, M | Discussion and review led by TAs |  |  |
| 3/4, W | EXAM #2 |  |  |
| 3/6, F | Caffeine | Ch. 14 |  |
| 3/9, M | NO CLASS, Spring Break |
| 3/11, W |
| 3/13, F |
| 3/16, M | Marijuana | Ch. 10 |  |
| 3/18, W |
| 3/20, F | Opioids | Ch. 11 |  |
| 3/23, M |
| 3/25, W | Hallucinogens and dissociatives: LSD, MDMA, PCP, ketamine | Ch. 15 | Quiz 4 due 3/25 |
| 3/27, F |
| 3/30, M | Schizophrenia and antipsychotic drugs | Ch. 19 |  |
| 4/1, W |
| 4/3, F | Mood disorders: antidepressants and mood stabilizers | Ch. 18 | Writing assignment due 4/3 |
| 4/6, M |
| 4/8, W | Anxiety disorders: sedative-hypnotic and anxiolytic drugs | Ch. 17 | Quiz 5 due 4/8 |
| 4/10, F |
| 4/13, M | Wrap-up and review of Unit 3 |  |  |
| 4/15, W | EXAM #3 |  |  |
| 4/17, F | Prepare for final exam and discuss legality of drugs |  |  |
| 4/20, M | FINAL EXAM 10-11:50 AM |  |  |