

PSYC62H3: Drugs and the Brain

University of Toronto Scarborough, Fall 2024 edition

Thursday 15h00 – 17h00

Science Wing SW128

Instructor: Robert ROZESKE
Office: Science Wing 627A
Office hours: Tuesday 12h00 – 13h00
Email: robert.rozeske@utoronto.ca

TEACHING ASSISTANTS

Emily COLLINS emilyanna.collins@mail.utoronto.ca (email contact for surnames beginning A-L)
Kylie LAU kylie.lau@mail.utoronto.ca (email contact for surnames beginning M-Z)

COURSE DESCRIPTION

Whether it be caffeine, alcohol, anti-depressants, cannabis, nicotine...many people regularly use psychoactive drugs and their impact on the mind can range from barely detectable to life-altering. Psychopharmacology examines the relationship between psychoactive drugs and their effects on cognition, perception, mood, and behaviour. It is a vibrant interdisciplinary field that draws upon botany, cell biology, chemistry, psychology, neuroscience, sociology, and public policy. This class will provide a survey of how these disciplines are integrated into the field of psychopharmacology.

We will begin by learning the basics of pharmacology and research methods in psychopharmacology. We will then examine the organizational principles and physiological functions of the major neurotransmitter systems. Equipped with this foundational knowledge, the second half of the term focuses on major drug classes. We will consider their pharmacokinetics, mechanisms of action, drug classification, psychoactive effects, and abuse potential. Finally, we will cover the development of drugs to treat psychiatric disorders.

COURSE OBJECTIVES

Describe psychopharmacological processes and how research in this field is conducted

Understand the function of neurotransmitter systems and how they are affected by different drug classes

Explain how psychoactive drugs affect cognition, perception, behaviour, and emotion

Identify and explain the potential for adverse consequences across a wide array of drug classes

Identify and explain the potential therapeutic benefits of psychoactive drugs

Explain how pharmacology is used to advance our understanding of neural function

Discuss, contrast, and critique the topics of reward, abuse, dependence, and addiction

Critically analyze the content of primary research articles, synthesize their meaning, and use them as compelling evidence to support a novel idea related to psychopharmacology in a research report

COURSE CONSIDERATIONS

Content: This course will cover several chapters in your textbook and in some cases the lectures will go beyond the textbook. Stay up to date with the course material! We move quickly the lectures contain several concepts that build upon each other. The best way to prepare for lecture is to read the assigned chapters prior to class. Given the course prerequisites, you will be familiar with many of the topics that we cover. However, we will go into detail on these topics, and you will be required to have an in-depth understanding. Note, you will be required to memorize material from class, but knowledge is more than simply memorizing facts. It is the application of information. For many exam questions you are required to apply concepts to make predictions about how a drug may affect a brain region.

Lectures: During lecture I will present information not contained in the textbook nor the lecture slides posted on Quercus. The posted slides are an outline of the topics, but you are responsible for the information that is presented during the lecture and in the assigned readings. Nowadays many students take notes with tablets, laptops, and other screen devices. When using these devices, I encourage you to reflect on how much you are learning versus transcribing.

Exams: The midterm and final exams will be composed of multiple choice and short answer questions. The multiple choice questions will have five options, some of which may be “all of the above” or “none of the above”. For the short answer questions, you may be required to diagram a biological phenomenon, write several sentences to explain a concept, apply your knowledge to solve a research question, or any combination of the aforementioned. Points for short answer questions are allocated based on importance; for this reason, a question worth five points will not necessarily require you to list five things. The exams will partially emphasize memorizing the names of proteins, receptors, genes, etc. But a greater emphasis will be placed on understanding how things work and applying these concepts to solve fictitious scientific problems. The goal is to know why a concept is important and demonstrate your ability to interact with the concept by applying it in novel ways to solve problems.

Grades: The grade you receive at the end of the semester is meant to reflect how well you understood, and applied, the content of the course. If you refer to the University’s Grade Definitions below, you will see that receiving an A or A+ requires true excellence. Achieving a high grade will require you to keep up with the course content, regularly review your knowledge of the concepts, and drafting your term paper throughout the term. If everyone in the class performs at an excellent level, everyone will receive high grades. Finally, there are no opportunities for extra credit or other arrangements to boost your grade.

Opportunities: If you are thinking about applying to a PhD program in neuroscience or to medical school, I strongly recommend that you find an opportunity to receive research experience in one of our neuroscience labs at UTSC. Research training is one of the most important educational tasks we accomplish at UTSC. Why is extensive research experience critical? It is important to assess your own interests in the field and to enhance the competitiveness of your applications to post-graduate programs. Feel free to come to my office hours to get advice on all aspects of research experience and on graduate school and life sciences careers in general.

WORKLOAD AS PERCENTAGE OF FINAL GRADE

1. Midterm exam:	30%
2. Quizzes:	10% (2 x 5%)
3. Term paper plan:	5%
4. Final term paper:	20%
5. Final exam:	35%

WORKLOAD DETAILS

1. Midterm exam (total 30%): exam date to be scheduled by the Registrar

This exam will cover material from the lectures and textbook from weeks 01-05. The exam will be composed of approximately 50 multiple choice questions and approximately 5 short answer questions. The length of the exam will not exceed 2 hours and will be closed book.

2. Online quizzes (total 10%): various due dates

There will be two quizzes to help students gauge how well they are keeping up with the course material. Quizzes are administered using Universal Design principles, so everyone will have 36 hours to initiate and complete the quiz. Although administered on Quercus outside of class hours, students must complete the quiz individually. The use of lecture notes, textbook, and online resources is **prohibited**. The quizzes contain multiple choice questions. **No extensions or make-ups** will be offered. Additional details will be forthcoming on Quercus.

3. Term paper proposal and references (total 5%) due 04 October by 11:59PM

In preparation for your term paper and to receive feedback about your proposed paper topic, you will submit on Quercus the two research articles that you examine in your term paper. Full assignment details are provided on Quercus. Prior to assignment submission, you must submit your report to the University's plagiarism detection tool embedded in Quercus. Late submissions are accepted, but with a 10% reduction per day late.

4. Final term paper (total 20%): due 27 November by 11:59PM

Your term paper will discuss two primary research articles. Full assignment details are provided on Quercus. The length must be between 5 and 5.5 double-spaced pages, this excludes the reference section. Prior to assignment submission, you must submit your report to the University's plagiarism detection tool embedded in Quercus. Late submissions are accepted, but with a 10% reduction per day late.

5. Final exam (35%): exam date to be scheduled by Registrar during 06-23 December

The final exam is cumulative in the sense that the fundamental principles of pharmacology will be essential to understand the lecture content during the second half of the term. However, the final exam will emphasize material covered from weeks 6-12. The final exam will be composed of approximately 50 multiple choice questions and approximately 5 short answer questions. The length of the exam will not exceed 2.5 hours and will be closed book.

COURSE MATERIALS

Students are responsible for all assigned readings. The textbook is *Psychopharmacology: Drugs, the Brain, and Behavior* 4th Edition by JS Meyer et al. ISBN: 978-1605359878, Oxford University Press. Alternatives to purchasing this hardcopy: (1) the 3rd edition is probably acceptable, (2) eBook that is available for purchase through Quercus Modules page.


TENTATIVE COURSE SCHEDULE

WEEK	DATE	TOPIC	READINGS
01	05 SEP	Course intro and basics of neuropharmacology	Syllabus, Chapters 1 & 4
02	12 SEP	Basics of neuropharmacology and research methods	Chapters 1, 2, 4
03	19 SEP	CNS basics and chemical signaling	Chapters 2, 3
	TBD	Due	Online quiz #1
04	26 SEP	Catecholamines and serotonin	Chapters 5, 6
05	03 OCT	Acetylcholine, GABA, and glutamate	Chapters 7,8
	04 OCT	Due	Term paper proposal & references
06	10 OCT	Drug misuse and addiction	Chapter 9
	TBD	Registrar will schedule exam between 29 SEP- 19 OCT	Midterm exam
07	17 OCT	Opioids	Chapter 11
08	24 OCT	Alcohol	Chapter 10
		Reading Week 28 OCT to 01 NOV	NO CLASS
09	07 NOV	Psychomotor stimulants	Chapter 12
	TBD	Due	Online quiz #2
10	14 NOV	Nicotine, caffeine, cannabinoids	Chapters 13, 14
11	21 NOV	Psychedelics and hallucinogens	Chapters 14, 15
	27 NOV	Due	Term Paper
12	28 NOV	Anxiolytics / antidepressants and anxiety / affective disorders	Chapters 17, 18
	TBD	Registrar will schedule exam during DEC 06-23	Final exam

COURSE POLICIES

Email: The only reason to send an email is to discuss personal matters. Email correspondence should be sent from a UofT email address to the instructor or TA's email address listed on the first page of the syllabus. Questions about course content should be posted on Quercus Discussion (see below). Email professor Rozeske for: personal matters. Email your TA (by surname) for: reviewing the midterm, MTW, or your grade. If you do not receive a response within 48 hours, it is likely that the answer is already addressed in the syllabus or Quercus Announcements. Messages sent using Quercus messaging will not

be answered. Please use professional email etiquette as outlined in the document “General Thoughts on Email Etiquette” that is available in the Files folder on Quercus.

Quercus Discussion: This platform will be used to facilitate efficient information transfer and leverage our collective knowledge. Questions regarding course content, lecture clarifications, term paper, reading material, midterm/final exam, and class logistics should be posted on this platform. Students, TAs, and instructors can reply in threads to specific discussion topics. If you do not receive a response within 48 hours, it is likely that the answer is already addressed in the syllabus or Quercus Announcements. If you want to ask a new question related to the Discussion Topic, click the blue Reply button to initiate a new question. If you would like to reply to an existing question, then click the  Reply icon/text to begin a thread. You can also Like a question or comment to signal that you have agree with the content. The TAs and I will attempt to answer questions ASAP, but generally you should expect a response in 24 hours.

Video and audio recording: No part of the classes may be recorded, unless you are granted specific permission by the instructor as part of an accommodation through Accessibility Services. This prohibition stems from reasons of privacy as well as protection of copyright. This is outlined in the Provost’s guidelines on *Appropriate Use of Information and Communication Technology*.

Availability of lecture material & copyright: A PDF of the slides will be posted on Quercus before lecture. As protection of copyright, unauthorized copying, use, or uploading onto the internet of any of the lecture slides, handouts, or course materials produced by Professor Rozeske is strictly prohibited.

Attendance: Lecture attendance is not assessed, but attending class will provide you with the fullest picture of the course content. There is a strong positive correlation of attendance and course success. The lecture slides are a framework of the material but not exhaustive in content. Therefore, it is essential to come and listen to the lectures. Please make it a point of pride that you are punctual. Understandably, circumstances periodically arise and tardiness cannot be avoided. But habitual tardiness demonstrates a lack of respect for the entire class as it disrupts the flow of the lecture. As the adage goes, “to be early is to be on time, to be on time is to be late”.

Classroom conduct: The University is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another’s differences. U of T does not condone discrimination or harassment against any persons or communities. Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person or online. Professional courtesy, respectful language, and sensitivity will help to create a welcoming and safe learning environment for everyone. Students are expected to be attentively engaged during lectures and resist the temptation to use their mobile device or laptop to engage in non-course related activities.

Office hours: Students are encouraged to attend office hours to clarify course content and discuss their performance in class. Students are also welcomed to attend office hours if they would like guidance on how they can become involved in neuroscience. If the office hours outlined on page one of the syllabus conflict with your schedule, we can arrange an alternative time.

Contesting a grade: Re-grade requests will only be considered within two weeks of grade posting. These will only be considered if adequate written justification is provided by the student. If granted, re-grading will consist of re-evaluation of the complete assignment, potentially leading to a grade decrease, no change,

or increase. Requests without a solid rationale will not be considered (e.g. I need a higher grade to apply to med school).

Midterm exam consultation: Following the grading of the midterm exam, students with questions about their grade should contact their TA and a time will be arranged to view the exam and consult with the TA.

Syllabus modifications: The instructor reserves the right to modify the syllabus. These changes will be communicated to the class via Quercus Announcements. Most often alterations to the syllabus will be related to lecture sequencing.

GRADING SCALE & DEFINITIONS

PERCENT	LETTER	GRADE VALUE	GRADE DEFINITION
90-100	A+	4.0	<i>Excellent:</i> Strong evidence of original thinking, good organization; capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.
85-89	A	4.0	<i>Excellent</i>
80-84	A-	3.7	<i>Excellent</i>
77-79	B+	3.3	<i>Good:</i> Evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with literature
73-76	B	3.0	<i>Good</i>
70-72	B-	2.7	<i>Good</i>
67-69	C+	2.3	<i>Adequate:</i> Student who is profiting from the university experience; understanding of the subject matter and ability to develop solutions to simple problems in the material.
63-66	C	2.0	<i>Adequate</i>
60-62	C-	1.7	<i>Adequate</i>
57-59	D+	1.3	<i>Marginal:</i> Some evidence of familiarity with the subject matter and some evidence that critical and analytic skills have been developed.
53-56	D	1.0	<i>Marginal</i>
50-52	D-	0.7	<i>Marginal</i>
0-49	F	0.0	<i>Inadequate:</i> Little evidence of even superficial understanding of subject matter; weakness in critical & analytical skills; limited or irrelevant use of literature.

QUERCUS

Quercus will be used to post important announcements, updates, readings and other materials required to complete class activities. Please log in to [Quercus](#) regularly to stay updated. Note that assignment grades will be periodically updated so that you can track your progress throughout the semester. **No grades posted on Quercus are considered official until they have been formally approved and posted on ACORN at the end of the course.** Please contact your TA as soon as possible if you think there is an error in a grade posted on Quercus.

UNIVERSITY LAND ACKNOWLEDGEMENT

I wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still home to many indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

ACADEMIC INTEGRITY

Academic integrity is essential to the pursuit of learning and scholarship, and to ensure that a degree from the University of Toronto is a strong signal of a student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's [Code of Behaviour on Academic Matters](#) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Potential offences in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment.

On tests and exams, cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If students have questions about what constitutes appropriate academic behaviour or appropriate research and citation methods, they are expected to seek out additional information on academic integrity from their instructors or from other institutional resources.

Note: You may see advertisements for services offering grammar help, essay editing and proof-reading. Be very careful. If these services take a draft of your work and significantly change the content and/or language, you may be committing an academic offence (unauthorized assistance) under the *Code of Behaviour on Academic Matters*.

It is safer to take your draft to the Writing Centre whose services can be accessed through the [Centre for Teaching and Learning](#). They will give you guidance that you can trust. Students for whom English is not their first language should go to the English Language Development Centre also available at the Centre for Teaching and Learning. If you decide to use these services in spite of this caution, you **must keep a draft** of your work and any notes you made before you got help and be **prepared to give it to your instructor** on request.

USE OF GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS

The use of generative artificial intelligence tools and apps is strictly prohibited in all course assignments unless explicitly stated otherwise by the course instructor. This includes ChatGPT, GPT4, and other AI writing and coding assistants. Use of generative AI in this course may be considered use of an unauthorized aid, which is a form of cheating. This course policy is designed to promote your learning and intellectual development. Use of generative artificial intelligence tools will prevent the fulfilment of

a central course objective, the synthesis of original ideas into a compelling written research report. The instructor reserves **the right to request a draft of your work** and any notes you made throughout your writing processing.

UNIVERSITY’S PLAGIARISM DETECTION TOOL

Normally, students will be required to submit their course essays to the University’s plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool’s reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of this tool are described on the [Centre for Teaching Support & Innovation](#).

ACCOMMODATIONS

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please contact [Accessibility Services Office](#). Accessibility Services staff (located in Rm AA142, Arts & Administration Building) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. Please contact 416-287-7560 (tel/TTY) or email ability.utsc@utoronto.ca for more information.

DEPARTMENT OF PSYCHOLOGY MISSED TERM WORK POLICY

For missed term work due to illness, emergency, or other mitigating circumstances, please follow the procedure outlined below.

Procedure:

1. Complete the [Request for Missed Term Work Accommodations Form](#) (“MTW Form”).
2. Email **BOTH** your MTW Form and Supporting Documentation to **your assigned TA** according to the instructions specified below.

Supporting Documentation Requirements and Deadlines:

Reason for Missed Work	Documentation required for a first absence in the term	Documentation required for subsequent absences in the term	Deadline for submitting MTW form and supporting documentation
Illness or Injury	ACORN Absence Declaration	Uoft Verification of Illness Form	WITHIN 2 BUSINESS DAYS of the missed work
Bereavement	ACORN Absence Declaration	A death certificate or funeral announcement	WITHIN 2 BUSINESS DAYS of the missed work
University-sponsored athletic or artistic obligation at the varsity/provincial/national level	ACORN Absence Declaration	A note from a university staff member (advisor, coach, residence staff, etc.) who can substantiate the obligation, sent directly to the course email	10 BUSINESS DAYS IN ADVANCE of the missed deadline

Disability-related reasons for students registered with AccessAbility Services	<p>For missed TERM TESTS,</p> <ul style="list-style-type: none"> - Contact your AccessAbility consultant and have them write to the course email detailing the accommodations needed. <p>For missed ASSIGNMENTS,</p> <ul style="list-style-type: none"> - If your desired accommodation is within the scope of your Accommodation Letter (e.g. your letter includes “extensions of up to 7 days” and you need 3 days), send your Accommodation Letter to the course email and specify how many days extension you are requesting. - If your desired accommodation is outside the scope of your Accommodation Letter (e.g. your letter includes “extensions of up to 7 days” but you need more time than that), contact your AccessAbility consultant and have them write to the course email detailing the accommodations needed. 	<u>PREFERABLY IN ADVANCE OF THE MISSED WORK, OR AS SOON AS POSSIBLE</u>
Academic Conflict (e.g. two midterms at the same time)	Screenshot from Quercus demonstrating the conflict.	<u>10 BUSINESS DAYS IN ADVANCE</u> of the missed work
Religious Conflict	None required	

Notes:

- The following reasons are not considered sufficient for missed term work: social activities, recreational travel, technological issues, avoidance of assessments or deadlines, work commitments
- [Missed Final Exams](#) are handled by the Registrar’s Office and should be declared on eService.
- For ACORN absence declarations, the date you declare the absence is required to fall within the seven-day declaration period (i.e.) the absence cannot be submitted proactively or retroactively.
- Instructors cannot accept term work any later than five business days after the last day of class. Beyond this date, accommodations are only possible via the Registrar’s Office [petition process](#).
- If you are unable to submit your request within the specified number of business days, you must still email your instructor within that window to explain the nature of the delay. Exceptions to the deadlines are made only under exceptional circumstances.
- Multiple assignments due on the same day are not considered academic conflicts. Students are expected to manage their time effectively to meet assignment deadlines.
- Back-to-back tests/quizzes are not considered academic conflicts. Only overlapping activities are conflicts.
- Students are responsible for keeping their course timetables conflict-free. Students who register in two courses with overlapping lecture/tutorial/lab schedules will not be accommodated.

Next Steps:

After submitting your documentation, you will receive a response from your instructor or TA. The course instructor reserves the right to decide what accommodations will be made. Failure to adhere to any aspect of this policy may result in a denial of your request. **You are responsible for checking your**

official U of T email and Quercus course announcements daily, as accommodations may be time-critical.

For missed assignments, **do not wait for the instructor's response to resume work on your assignment**. Extensions may be as short as one business day, depending on the nature of the illness/emergency. Complete your assignment as soon as you're able, and email it to your instructor.

If an accommodation is granted but a continued illness/emergency prevents you from meeting its requirements, you must repeat the missed term work procedure to request additional accommodations.

Please make it clear in your subject line that you are requesting a second accommodation.

Examples: If you were granted an extension for a paper but are still unable to meet the new deadline, or if you miss a make-up term test, you must submit *another* MTW form and supply documentation according to the "subsequent absences" column in the chart above. *Note: In the case of a missed make-up test, an opportunity to write a second make-up test may not necessarily be provided.