

PSYC62H3: Drugs and the Brain

University of Toronto Scarborough, Fall 2023 edition

Thursday 15h00 – 17h00

Science Wing SW143

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TEACHING ASSISTANTS

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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. Psychopharmacology 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 will focus 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's content. Stay up to date with the content because we will move quickly through the textbook and several of the concepts covered in one week's lecture will build upon the content of the following week. The subject matter we will cover is not conceptually difficult, but it will be a lot of content. The best way to prepare for lecture is to read the assigned chapters prior to class because the lecture will not always cover the textbook content verbatim. Given the prerequisites of this course you will be familiar with many of the topics that we cover throughout the semester. However, we will go into detail on these topics, and you will be required to have an in-depth understanding of the concepts. Note, although you will be required to memorize material from class, knowledge is more than simply memorizing facts. Many exam questions will require you to apply your knowledge of concepts to make predictions about how a drug may affect a brain region.

Lectures: During lecture I will present information that goes beyond the content in the textbook and what is contained in the lecture slides posted on Quercus. The lecture 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. I cannot emphasize enough that it is important to read the assigned textbook chapters prior to attending class. 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 over the course of weeks. If everyone in the class performs at an excellent level, everyone will receive high grades. This course contains assignments that will help you to gauge your level of understanding the course content and preparation for the final term paper. Finally, there will be no opportunities for extra credit or other arrangements to boost your grade at the end of the semester.

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, medical programs, 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 determined during Week 07

This exam will cover material from the lectures and textbook from weeks 01-05. The exam will be composed of primarily multiple choice questions and a few short answer questions. The length of the exam will not exceed two hours and will be closed book.

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

To help students gauge how well they are keeping up with the course material, two online quizzes will be administered. These are closed-book quizzes and will contain multiple choice questions. Students will have a 36-hour time period to initiate and complete the quiz. No extensions will be granted for completing the quizzes. Additional details will be forthcoming on Quercus.

3. Term paper proposal and references (total 5%) due 06 October by 11:59PM EST

In preparation for your term paper and to receive feedback about your proposed paper topic, you will submit on Quercus the two research articles you will compare and contrast. 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 29 November by 11:59PM EST

For this assignment, you will write a term paper that compares and contrasts two primary research articles. Full assignment details are provided on Quercus. The length must be between 4.75 and 5 double-spaced pages, this excludes the reference section. In Word, use Times New Roman font size 11 with 2.54 cm (1") margins. 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 schedule by Registrar during 07-20 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 primarily multiple choice questions and a few short answer questions. The length of the exam will not exceed three 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 course page.

TENTATIVE COURSE SCHEDULE

WEEK	DATE	TOPIC	READINGS
01	07 SEP	Course intro and basics of neuropharmacology	Syllabus, Chapters 1 & 4
02	14 SEP	Chemical signaling in the CNS: Targets of drug action	Chapters 2 & 3
03	21 SEP	Catecholamines and serotonin	Chapters 5, 6
	TBD	Due	Online quiz #1
04	28 SEP	Acetylcholine, GABA, and glutamate	Chapters 7, 8
05	05 OCT	Drug misuse and addiction	Chapters 9
	06 OCT	Due	Term paper proposal & references
		Reading Week 07-13 OCT	NO CLASS
	TBD	Registrar will schedule exam between OCT 14-21	Midterm exam
06	19 OCT	Alcohol and opioids	Chapter 10, 11
07	26 OCT	Alcohol and opioids II	Chapters 10, 11
08	02 NOV	Psychomotor stimulants	Chapter 12
09	09 NOV	Nicotine, caffeine, cannabinoids	Chapters 13, 14
	TBD	Due	Online quiz #2
10	16 NOV	Psychedelics and hallucinogens	Chapter 15
11	23 NOV	Anxiolytics / antidepressants and anxiety / affective disorders	Chapter 17, 18
	29 NOV	Due	Term Paper
12	30 NOV	Antipsychotics and schizophrenia	Chapter 19
	TBD	Registrar will schedule exam during DEC 07-20.	Final exam

COURSE POLICIES

Email: 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. Email professor Rozeske for: clarification on material presented during lecture, exam preparation, academic/professional questions. Email your TA (by surname) for: questions about course reading material, term paper questions, reviewing the midterm, or grades. Questions that were already addressed in the syllabus or Quercus Announcements are unlikely to receive a response. Please use professional email etiquette as outlined in the document "General Thoughts on Email Etiquette" that is available in the Files folder on Quercus.

Video and audio recording: For reasons of privacy as well as protection of copyright, unauthorized video or audio recording in the classroom is prohibited. This is outlined in the Provost's guidelines on *Appropriate Use of Information and Communication Technology*. Note, however, that these guidelines include the provision that students may obtain consent to record lectures and, "in the case of private use by students with disabilities, the instructor's consent must not be unreasonably withheld."

Availability of lecture material and copyright: A PDF of the lecture slides will be posted on Quercus shortly before lecture. Note that this posting does not represent the totality of the course. The lecture will cover material that is not explicitly contained in the slides. For this reason, the slides are not a substitute for attending 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: Although lecture attendance is not an assessment for your final grade, attending class will provide you with the fullest picture of the course content. There is a strong correlation of attendance and course success. The lecture slides provided serve as a framework of the material, but are 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 if they want to discuss the course content and 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 medical or graduate school).

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

<https://advice.writing.utoronto.ca/general/grading-policy/>

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 <https://q.utoronto.ca>. Please 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 (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

On papers and assignments, cheating includes 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, stealing exam materials, 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 at <http://uoft.me/AcademicLearningSupport>. 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.

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 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. If the instructor or TA suspects use of generative artificial intelligence tools, they will request that you submit **copies of previous drafts of your work** and any notes you made throughout the research paper process.

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 website (<https://uoft.me/pdt-faq>).

MASKS IN THE CLASSROOM

While the mask mandate was paused as of 01 July 2022, the use of medical masks continues to be encouraged at U of T Scarborough in indoor settings where physical distancing is not possible. We ask everyone to respect each other’s decisions, comfort levels, and health needs. Masks are available at all building entrances at U of T Scarborough and in all classrooms.

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 free to approach me and/or the Accessibility Services Office (<http://www.utsc.utoronto.ca/ability/>) as soon as possible. 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. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

DEPARTMENT OF PSYCHOLOGY MISSED TERM WORK POLICY

For missed term work (assignments and term tests) 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
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Illness or Injury	ACORN Absence Declaration	UofT Verification of Illness Form	<u>WITHIN 2 BUSINESS DAYS</u> of the missed work
Bereavement	ACORN Absence Declaration	A death certificate or funeral announcement	<u>WITHIN 2 BUSINESS DAYS</u> 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	<u>10 BUSINESS DAYS IN ADVANCE</u> 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.