PSYC*3030, Course Outline: Winter 2022

General Information

Course Title: PSYC*3030 – Neurochemical Basis of Behaviour

Course Description: This course deals with the link between neurochemical systems and behaviour. The actions of neurotransmitters in the brain strongly influence all aspects of behaviour, from emotions and motivation to perception, learning, and memory. This course will help you to understand the role of these neurochemical systems in behaviour and the mechanisms through which psychoactive drugs influence these systems and affect psychological processes. Topics of discussion will include anatomical, biochemical, and physiological aspects of neurotransmitter systems in the brain, current theories of function of these systems in behaviour, and actions of psychotropic drugs.

Format: Lectures

Due to the ongoing COVID-19 pandemic, some courses are being offered virtually and some face-to-face. **This course is being offered Face-to-Face: The course has a set day, time, and location of class, and students are required to be on campus.** For missed lectures (e.g., due to illness, the requirement to self-isolate, work, etc.), students are expected to take their own steps, such as arranging with other students to catch up on missed materials. A discussion board is available on CourseLink for students to share lecture notes, and specific questions about missed material can be emailed to the instructor. For missed exams and assignments, detailed polices are listed below in the Course Policies section. Accessibility-related requests for accommodation should follow standard university procedures, and all other requests should follow standard academic consideration policy and procedures.

HOWEVER, with the rising COVID-19 caseloads as of December 2021, the Administration has indicated that at least the first two weeks of classes (Jan 10-21, 2022) will be online. I will therefore be delivering the lectures on Jan 11, 13, 18, and 20 via Zoom through the links provided in the Content (ZOOM) section of CourseLink for our course (PSYC*3030). This period is subject to extension depending on future advice from Wellington-Dufferin-Guelph Public Health and the University Administration.

Credit Weight: 0.5

Academic Department (or campus): Psychology

Semester Offering: W22

Class Schedule and Location: Tuesdays and Thursdays, 2:30-3:50 PM; MACS (Macdonald Stewart Hall) Room 209

Instructor Information

Instructor Name: Dr. Boyer Winters
Instructor Email: bwinters@uoguelph.ca
Office location and office hours: MCKN 3005; ext. 52163**;** Meeting by arrangement; e-mail at all times

GTA Information

GTA Name: Anita Sikic; Lindsay Bryant
GTA Email: asikic@uoguelph.ca; bryantl@uoguelph.ca
GTA office location and office hours: TBA; meeting by arrangement (email)

Course Content

Specific Learning Outcomes:

By the end of this course, successful students should be able to:

1. Recall and describe various neurochemical mechanisms underlying nervous system function and its regulation of aspects of behaviour such as cognition, motor performance, and addiction.
2. Explain various pharmacological concepts germane to the properties of the nervous system and the effects of drugs on neurochemical and behavioural function (e.g., drug efficacy vs potency).
3. Explain and evaluate the relative strengths and weaknesses of various methods used in the field of neuropsychopharmacology to study the neurochemical basis of behaviour.
4. Explain and contrast specific cellular and behavioural effects of drugs and neurotransmitters acting at different receptors in the nervous system (e.g., ionotropic vs metabotropic receptors).
5. Describe the neurochemical bases of various neurodegenerative and neurological disorders and critically evaluate candidate treatment strategies based on pharmacological manipulations.

Lecture Content:

Schedule of topics and dates.

The following is an outline of how the course will proceed. However, if necessary, I reserve the right to progress more slowly than indicated.

Schedule	Topic	Readings
Jan 11	Lecture 1: Introduction	Ch 8 (1st ed)/Ch 9 (2nd ed)

Schedule	Topic	Readings
Jan 13	Lecture 2: Principles of Pharmacology	Ch 1
Jan 18	Lecture 3: Principles of Pharmacology	Ch 1
Jan 20	Lecture 4: Cellular components of the Nervous System	Ch 2
Jan 25	Lecture 5: Synaptic Structure and Function	Ch 3
Jan 27	Lecture 6: Synaptic Structure and Function	Ch 3
Feb 1	Lecture 7: Methods in Neuropsychopharmacology	Ch 4
Feb 3	Lecture 8: Methods in Neuropsychopharmacology	Ch 4
Feb 8	Lecture 9: Neurotransmitter Systems – Acetylcholine	Ch 6 (1st ed)/7 (2nd ed)
Feb 10	Lecture 10: Neurotransmitter Systems – Acetylcholine	Ch 6 (1st ed)/7 (2nd ed)
Feb 15	Mid-Term I	
Feb 17	Lecture 11: Neurotransmitter Systems - Serotonin	Ch 6
Feb 21-25	WINTER BREAK – NO CLASS	
March 1	Lecture 12: Neurotransmitter Systems – Serotonin	Ch 6
March 3	Lecture 13: Catecholamines/Dopamine	Ch 5
March 8	Lecture 14: Dopamine	Ch 5
March 10	Lecture 15: Norepinephrine	Ch 5
March 15	Lecture 16: Norepinephrine Amino Acid Neurotransmitters	Ch 5 Ch 7 (1st ed)/8 (2nd ed)
March 17	Lecture 17: Amino Acid Neurotransmitters	Ch 7 (1st ed)/8 (2nd ed)
March 22	Mid-Term II	
March 24	Lecture 18: Amino Acid Neurotransmitters	Ch 7 (1st ed)/8 (2nd ed)

Schedule	Topic	Readings
March 29	Lecture 19: Major Drug Classes – Opiates	Ch 10 (1st ed)/11(2nd ed)
March 31	Lecture 20: Major Drug Classes – Opiates	Ch 10 (1st ed)/11(2nd ed)
April 5	Lecture 21: Major Drug Classes - Cannabinoids	Ch 13 (1st ed)/14(2nd ed)
April 7	Lecture 22: Major Drug Classes - Cannabinoids	Ch 13 (1st ed)/14(2nd ed)

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Midterm #1	Feb 15, in class	25%	1-5
Midterm #2 (non-cumulative)	March 22, in class	25%	1-5
Final Exam (cumulative)	April 20, 2022; 8:30-10:30AM (location TBA)	50%	1-5
Optional Written Assignment	April 11, by 11:59pm; Dropbox on CourseLink	Potential to replace weight of MT1 or MT2 (25%)	1-5

Additional Notes: The written exams will be a mix of multiple choice and short answer questions.

Optional Written Assignment: "Your Brain on Drugs". Students will have the option to complete a written critique of a recent media report regarding a drug's behavioural effects and/or relevance to a human behavioural disorder (e.g., Alzheimer's, Parkinson's, schizophrenia, etc.). THIS PAPER IS NOT MANDATORY. If a student chooses to complete this assignment, they will have the option to replace the lower of the two midterm grades. ***Please note that all students must still write both midterms; this optional assignment merely provides the opportunity to replace the lowest of your two midterm grades.***

THE FINAL EXAM GRADE CANNOT BE REPLACED.

This paper should be approximately 5 pages, double-spaced, 12-point font, plus a title page with your name, student ID, and a citation of the media report in question. Your critique should include an introduction summarizing the relevant background topic, a summary of the media report contents and conclusions, a description of the actual research on which the report is based (i.e., the published scientific study), a critical comparison of the media report and actual study findings, and your conclusions about the accuracy of the media report. You should

include a reference list with formatted citations (APA or Journal of Neuroscience style); reference list and title page do not count towards the 5-page limit. A session will be held in class closer to the end of the semester to address student questions regarding this assignment.

Final examination date and time: April 20, 2022; 8:30-10:30AM

Final exam weighting: 50%

Course Resources

Required Texts: J.S. Meyer & L.F. Quenzer. Psychopharmacology: drugs, the brain, and behavior. Massachusetts: Sinauer. ***1st, 2nd, or 3rd edition is acceptable.***

Other Resources:

Web site: lecture notes will be available online before each class. Just logon to CourseLink using your U of G email username and password.

Course Policies

Grading Policies

If you miss an exam, please inform me AS SOON AS POSSIBLE, so that a make-up can be arranged.

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

University Policies

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:
Academic Consideration, Appeals and Petitions

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
Academic Misconduct Policy

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email accessibility@uoguelph.ca or see the website: Student Accessibility Services Website

Student Feedback Questionnaire

These questionnaires (formerly course evaluations) will be available to students during the last 2 weeks of the semester: March. 28th – April 08th. Students will receive an email directly from the Student Feedback Administration system which will include a direct link to the questionnaire for this course. During this time, when a student goes to login to Courselink, a reminder will pop-up when a task is available to complete.
Student Feedback Questionnaire

Drop date

The last date to drop one-semester courses, without academic penalty, is April 8th, 2020. For regulations and procedures for Dropping Courses, see the Academic Calendar:
Current Undergraduate Calendar