Course syllabus, lectures, and schedule are subject to change at any time
Course: BIOL 4220.001/BIOL 5220.001, Neuropsychopharmacology
Semester: Spring 2026
Lecture: MWF 9:00 am - 9:50 am
Location: BLB 090

Professor:	Dr. Nicoladie Tam
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Office hr:	MWF 9 am - 9:50 am or by appointment

Textbooks:

Neuropsychopharmacology by Tam. TopHat, Toronto, Canada. https://app.tophat.com/e/135509/ ISBN: 978-1773307947
Psychopharmacology: Drugs, the Brain, and Behavior by Meyer and Quenzer. Sinauer, MA, 2018. 3rd Edition. 840 pages. ISBN: 978-1605355559 List price: $169.99
Principles of Neuropsychopharmacology by Feldman, Meyer, & Quenzer. Sinauer, MA, 1997. 1st Edition. 909 pages. ISBN: 978-0878931750 List price: $114.83 $252.54
A Primer of Drug Action by Julien. W. H. Freeman & Co, NY, 2023. 15th Edition. 704 pages. ISBN: 978-1319244866
List price: Paperback: $154.99 eBook: 107.99
The Biochemical Basis of Neuropharmacology by Cooper, Bloom & Roth. Oxford Univ Press, NY 2002. ISBN: 978-0195140088
List price: Paperback: $45.00

Course Audience:

This self-contained course is designed for a broad audience with diverse backgrounds in biology and related disciplines, such as psychology, chemistry, and biophysics. Class attendance is required.

Course Objectives:

Students are expected to reach competency by examining critically, gaining in-depth knowledge, and integrating the following:

- Scientific methods used in neuroscience, neuropharmacology, and neuropsychology
- Biophysical and biochemical mechanisms and principles used in the central nervous system
- Neurobiological basis of physiological and psychological functions, and pharmacological actions for mental disorders
- Neuropsychopharmacological effects of psychotropic drugs on physiological functions and psychological behavior in mental disorders
- Neurobiological basis of mental disorders, pharmacological treatments, and neural pathways of these disorders.

At the end of the semester, students are expected to understand and integrate the interactions among medicine, the brain, and behavior; the neurobiological basis of mental disorders (including mood, motor, thought, and developmental disorders); and how treatments for these disorders are based on neurobiological circuitry.

Attendance Policy:

UNT Policy 6.039: https://policy.unt.edu/sites/default/files/06.039_StudAttnandAuthAbsence.Pub2_.19.pdf
According to the UNT Student Attendance Policy 6.039, class lecture attendance is expected and required. Students are responsible for regular and punctual attendance and are expected to participate in course lectures. Absence may lower the grade of class participation. An excused absence must be in writing. Reviewing the lecture recording does not count as attendance.

Class Participation:

Students are expected to participate in lectures with in-class exercises and question-and-answer activities. The in-class exercises may be graded (as part of the homework grade).

Grading Policy:

Exams (each of the 4 exams counts as 20% of the final grade):

- 3 in-class exams (multiple-choice questions; incremental, covering materials from the previous to the current exam).
- Final Exam (essay questions; comprehensive, covering materials for the entire semester).
  - Graduate students enrolled in BIOL 5220 must write a term paper (16.7%), while each exam and HW counts 16.7%

Homework (total HW counts 20% of final grades):

- Canvas HW + TopHat HW + in-class exercises = total HW grades

Extra credit (optional):

- Optional assignments are extra credit. They will help your grades, but won't penalize you if you don't do them.

Note:

- **Final grade = 4xExam (4x20%) + HW (20%) + ExtraCredits**
- Any work that plagiarizes without citing sources is considered cheating.
- Posted Canvas grades are for accuracy verification.
  - Canvas calculations may be incorrect because the system struggles with weighted averages and optional assignments.
  - It may also have syncing issues with TopHat.
- Use the formula above to calculate the final manual grade.

Exam Policy:

Students cannot leave the classroom until 20 minutes after the exam begins. Once the first student leaves, no one else may start the exam; late arrivals must take the comprehensive makeup exam. Once a student leaves, they cannot return to take the exam.

Incomplete Grade Policy:

Only students with documented emergencies will receive an "I" (incomplete) for missing the final exam grade.

Code of Conduct:

UNT Policy 07.012: https://policy.unt.edu/sites/default/files/07.012_CodeOfStudConduct.Final8_.19_0.pdf
Students must earn grades with integrity and follow the UNT Student Code of Conduct.

Academic Integrity Policy:

UNT Policy 06.003: https://policy.unt.edu/sites/default/files/06.003.AcadIntegrity.Final_.pdf
No electronic devices, including cell phones and Bluetooth devices, are permitted during the exam. Talking or requesting assistance from others is also prohibited. Exam scantrons will be photocopied for records. Altering graded Scantron bubbles is cheating. Violating the UNT Academic Integrity Policy (including plagiarism or assisting others in accessing unauthorized materials) may result in disciplinary action, such as a grade of zero or referral to the Office of Academic Affairs Integrity.

Disability Accommodation:
UNT Policy 04.015: https://policy.unt.edu/sites/default/files/04.015_04.014.ADAAccommodation.Merger.Final11.20.pdf
The Department of Biological Sciences adheres to the Americans with Disabilities Act and provides accommodations to qualified students with disabilities. If you qualify under the ADA and need accommodations, please submit documentation to the Office of Disability Accommodation (ODA) for approval at the start of the semester. https://studentaffairs.unt.edu/office-disability-access
Tentative lecture schedule
Note: The lecture schedule is approximate and serves as a guideline for the anticipated presentation sequence. The lecture content and topic may change as needed. Students are responsible for attending the lectures.

Exam #1	Fri, Feb 20
Exam #2	Fri, Mar 20
Exam #3	Fri, Apr 24
Final Exam	**Sat, May 2, 7:30 am to 9:30 am**

Topics	Lectures
1	Introduction to neuropsychopharmacology, evolution of the nervous system: functions and dysfunctions
	Behavioral Neural Circuitries and Survival Functions
2	Behavioral avoidance system in fear and anxiety in mammalian evolution
3	Behavioral reinforcement system and associative learning and memory in behavioral drive and addiction
	Physiological Neural Circuitries and Functions
4	Emotional circuitries for learning and memory and prediction in relation to affective disorders
5	Sensory circuitries for neural processing from physical sensation to cognition, perception, and localization
6	Motor circuitries for actuation, coordination, and motor disorders
	Neurotransmitter Circuitries and Drug Actions
7	Catecholaminergic systems and dopaminergic system for rewards, decisions, and behavioral motivations
8	Noradrenergic system and serotoninergic system for alertness, safety, and security
9	Cholinergic, glutaminergic, GABAergic, opioid and anandamide systems for cognition, anxiety, pain processing
	Neural Transmission: Synaptic Mechanisms, Vesicular Release and Transporters
10	Vesicular release and cytoplasmic release process in amphetamine-induced release by drugs
11	Reverse transporter model for amphetamine and MDMA induced release of neurotransmitters
	Behavioral Psychology
12	Classical and operant conditioning on reinforced behavior with positive and negative reinforcers
13	Reinforcement schedule for inducing reinforced behavioral activation and behavioral avoidance
14	Stimulus response function, innate reflex, conditioned reflex, learning and memory mechanisms
15	Behavioral conditioning, neural mechanism of synaptic plasticity
	Pharmacology of Drug Actions and Drug Effects
16	Drug-receptor and drug-enzyme bindings
17	Dose response curve, population response, dosage and toxicity
18	Drug half-life and dosage calculation
19	Fate of drug: administration, absorption
20	Fate of drug: distribution, binding, inactivation and excretion
21	Ionization of drug and its effect on drug absorption
22	Drug metabolism and by-products
23	Drug tolerance, cross-tolerance, behavioral tolerance and sensitization
	Behavioral Psychology and underlying Neural Mechanisms
24	**Cognitive Disorders and Alzheimer's Disorder:** symptoms and treatments
25	**Motor Disorders and Parkinson's Disorder:** symptoms and treatments
	Attention Deficit Hyperactivity Disorder (ADHD) and Developmental Disorders.
26	ADHD characteristics, symptoms, etiology, and screening tests
27	Executive control functions and working memory in the prefrontal cortex (PFC)
28	Genetic traits**,** candidate genes involved in ADHD and pharmacological treatments of ADHD
	Affective Disorders: Mood Disorders, Depression, Mania and Bipolar Disorder
28	Affective disorders: Depression characteristics and symptoms, mania and bipolar disorder
30	Hypothalamic-pituitary adrenal axis: Model of stress factors in endocrine feedback
31	Suicidal risk factors, animal models of depression, treatment of depression and classes of antidepressants
32	MDMA, empathogen and entactogen, therapeutical use, PTSD
	Anxiety Disorders
33	Anxiety disorders, phobia. obsessive compulsive disorder, and subtypes of anxiety disorder and symptoms
34	Pharmacotherapy of anxiety disorders, neural mechanisms and classes of anxiolytic drugs
35	Barbiturate, benzodiazpine and dependence
36	Alcohol, alcoholism, treatment and dependence
	Schizophrenia and Thought Disorders
37	Psychosis and Schizophrenia and Subtypes of schizophrenia
38	Risk factors in schizophrenia, pathology and etiological model of schizophrenia

39	Pharmacological treatments of schizophrenia
40	Psychotherapy and Johari window
41	Nicotine and caffeine