



Neuropharmacology

Fall 2020

Course Number/Section: NSC 4363-001

Course Title: Neuropharmacology

Classroom: Microsoft Teams/eLearning

Term: Fall 2020

Dates: Aug 18th – Nov 24th

Days & Times: Tuesday & Thursday 8:30- 9:45 am

Professor Contact Information:

Professor: Greg Dussor, PhD

Email Address: gregory.dussor1@utdallas.edu

Office Location: BSB 10.538

Office Phone: 972-883-2385

Office Hours: One hour after each Tuesday lecture (in MS Teams), or email for appointment.

Teaching Assistants:

Reyanne West Reyanne.West@UTDallas.edu (Graduate TA)

Teaching Assistant Office Hours: email for appointment

Review sessions: to be determined.

Final Exam: Date to be determined, 8:00-10:45 am

Course Format

All lectures will be recorded and will be available for you to watch/listen at any time during the course. Lectures will be every Tuesday and Thursday morning from 8:30 to 9:45 in MS Teams. You can join the lectures in the lecture channel within Teams. Lectures are pre-scheduled for each of the class times throughout the semester. You are encouraged to attend live lectures but if you are not available during normal class time, you can watch/listen to all of the lectures at a time that is convenient for you. Recordings (as video with audio) will be added to the lecture channel after the end of the lectures. There will likely be a delay in the posting of recordings, depending on the time needed for file encoding (this is entirely dependent on MS Stream bandwidth). You can either watch the lecture within the MS Teams channel or on the MS Stream website. Office hours and review sessions will also be held in MS Teams but will not be recorded.

Course Pre-requisites

Prerequisites: NSC 4352 or NSC 4354

Course Description

The primary goal of this course is to provide an overview of the field of neuropharmacology. Topics that will be covered include principles of synaptic neurotransmission as well as the anatomy/physiology of specific neurotransmitter systems. These neurotransmitter systems will include major transmitters such as dopamine, serotonin etc. as well as atypical transmitters such as endovanilloids, nucleotides, and nitric oxide. Also covered in this course is the basic pathology of disease states that are related to specific neurotransmitter systems such as Parkinson's and Alzheimer's disease. Finally, the course will cover pharmacological agents that manipulate these neurotransmitter systems either for the treatment of disease or for their abuse potential.



Student Learning Objectives/Outcomes

After completing the course, students should be able to:

- 1.1 Understand the basic principles of pharmacology including ligand-receptor interactions, affinity, efficacy, potency, concentration-response curves, binding assays.
- 1.2 Describe the mechanisms by which neurons send electrical signals, activate intracellular pathways, and communicate with other neurons
- 1.3 List the main types and families of ion channels, g-protein coupled receptors, kinases, and nuclear receptors.
- 1.4 Explain the major neurotransmitter systems, their basic anatomy/physiology, and how these systems are modulated by pharmacological agents.
- 1.5 Understand how pharmacological agents can be used to correct pathological functions of the nervous system.
- 1.6 Explain basic experimental methods used to identify pharmacological targets.
- 1.7 Identify areas of neuropharmacology where drugs are lacking or are ineffective.

Required Textbooks and Materials

- 1) Eric Nestler, Steven Hyman, and Robert Malenka. *Molecular Neuropharmacology: A Foundation for Clinical Neuroscience*. Third Edition. McGraw Hill. The second edition is also acceptable.
- 2) Lecture PPT files will be posted on eLearning before each lecture. There is no guaranteed posting date or time but files will be posted at least 1 hour before lecture. Slides are for your own use to aid your learning in this course. Reposting of these slides online or reuse of these slides for other purposes is prohibited.

Course Policies & Requirements

The concepts covered in this course can be technically challenging. Reading the textbook prior to lecture is highly recommended to understand the concepts and to complete the course successfully.

Grade Changes:

Following exams you will have one week, after which no changes will be made to any grade. There is no opportunity for extra credit in this course.

Exams:

There will be 3 comprehensive (cumulative) exams and a final. These exams cannot be dropped. Exams will be multiple choice. Excused absences for exams require both appropriate documentation and **advance notice** (by email, phone, or in person).

Exams will be given virtually using Honorlock. Honorlock exams can be taken from your home and allow online proctoring. To take an Honorlock exam, you will need a computer (desktop or laptop; not a phone/tablet), a webcam and microphone on the computer, internet connection, Chrome browser (only Chrome is allowed), and the Honorlock browser extension in Chrome. More details are found at <https://ets.utdallas.edu/testing-center/honorlock> . UTD also has a student computer checkout program that may be helpful, details are here <https://www.utdallas.edu/oit/news/student-computer-checkout-availability/>



Weekly assignments:

Each week after the Thursday lecture, an assignment will be posted in eLearning. The assignment will typically be 1 or 2 questions based on the lectures from that week and answers will be submitted in the eLearning assignment page. Answers will be due by the following Monday at 11:59 pm. Assignments will be graded and the average score for all assignments throughout the semester will represent 10% of your final course grade. Grading for each question will be 2 points for a correct answer, 1 point for an answer that is partially correct, and 0 points for an incorrect answer.

Paper review:

In addition to the exams and assignments, 10% of your grade will come from review of a research article that you select. There will be a list of articles to choose from, posted in eLearning. You can review any of the articles from that list for your review. Your review should be approximately 1 typed page, 1.5 line spacing, 0.5 inch margins, and 11-point font. Include the full citation of the article at the beginning of your review (Article title, Journal name, year, volume, issue, pages). In your review, cover the following:

- 1) What is the article about, what question does it address, and what does it show that is novel?
- 2) What methods did the authors use to generate their data and findings?
- 3) Do you agree with the authors' conclusions and what questions are unresolved after their study?
- 4) What does the article have to do with neuropharmacology?
- 5) Do you think this article has any impact on understanding or treatment of human disease and why/how?

Attendance: All students are encouraged to attend each live lecture. If attendance at live lectures is not possible, you are encouraged to keep up with the lectures so that you do not fall behind.

Grading Policy and Final Grade Scale

(NOTE: There is NO extra credit possible in this class)

Exam 1:	(20% of your grade)
Exam 2:	(20% of your grade)
Exam 3:	(20% of your grade)
Final: Dec ?? @ 8:00am	(20% of your grade)
Weekly assignments:	(10% of your grade)
Paper review:	(10% of your grade)

As described above, 10% of your grade will be based on review of a research article, which can be turned in at any time throughout the semester.

GRADING SCALE:

Percent Grade Point Range Totals

- 90.0-100% A
- 78.0-89.99% B
- 65.0-77.99% C
- 55.0-64.99% D
- 54.99% and less F



UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

There are also specific details related to asynchronous lectures found here:
<https://www.utdallas.edu/fall-2020/asynchronous-access-for-fall-2020/>

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.