

NEUR 651: MOLECULAR NEUROPHARMACOLOGY

Spring 2024; W 2-4:10; ONLINE SYNCHRONOUS

INSTRUCTOR: Nadine Kabbani, Ph.D.

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Office Hours: by appointment

Overview: This is a core graduate neuroscience course that covers key concepts in molecular neuropharmacology. It emphasizes topics such as receptor signaling, mechanisms of cell structure, neuromodulation, synaptic neuron properties, and molecular mechanisms of brain disease and treatment. The course also explores current trends in neuropharmacology research. **Attendance is required.**

Textbook: There is no textbook for this course. I do however recommend Molecular Neuropharmacology: A Foundation for Clinical Neuroscience (Second Edition or newer) by Eric Nestler, Steven Hyman, Robert Malenka, to accompany the topics covered.

Class structure and grading: The class is divided into 2 parts: A lecture by me followed by a student led presentation and a discussion of an article of your choice. Your final grade is based on scores in 2 exams (each worth 40%) and the presentation (20% graded according to the following rubric).

Criteria	Strong (10)	Average (8)	Below average (6)
Content (10pt max.)	Topic was discussed thoroughly, and sufficient information provided.	Topic was discussed well. One or more issues were not entirely clear.	Discussion of the topic enabled a broad understanding leaving several unanswered questions.
Delivery/Organization (10pt max.)	Well prepared. Slides were clear. The presenter answered all questions.	Minor aspects of the presentation (visual or verbal) were not clear.	Presentation lacked clarity

HONOR CODE: You must follow the guidelines of the GMU Honor Code as described in the GMU catalog.

Disabilities: If you are a student with a disability and you need academic accommodations, please see me privately and contact the Office of Disability Resources at 703-993-2474.

Inclement Weather: On bad-weather days, consult the University's homepage for cancellation information.

Course Schedule

Date	Lecture Title	Chapter	Presenter
1/17	Fundamentals of Neuropharmacology	Ch. 1	-----
1/24	Cellular Basis of Communication	Ch. 2	-----
1/31	No class		Deadline to pick articles
2/7	Synaptic Transmission/ Signal Transduction in the Brain	Ch.3, 4	Laura M.
2/14	Article Presentation		Heather and Yewande
2/21	Excitatory and Inhibitory Amino Acids, Widely Projecting Systems: Monoamines and Acetylcholine, Neuropeptides	Ch. 5, 6,7	-----
2/28	Exam 1	Ch. 1-7	
3/6	No class Spring Break		
3/13	Neural and neuroendocrine control of the internal milieu	Ch. 10	Sally F.
3/20	Higher cognitive function and behavioral control	Ch. 13	Ben F.
3/27	Neurodegeneration	Ch. 17	Christina R.
4/3	Mood and emotion	Ch. 14	Ama B.
4/10	Reinforcement and addictive disorders	Ch. 15	Diana K.
4/17	Neurodevelopment		Rachel W./Fatima
4/24	Psychotic Disorders	Ch. 16	Miranda R.
5/1	Exam 2	Ch. 10-17	

Guideline on presentations-

The article presentation portion of the course is intended to help the student gain insight into the current literature and become familiar with trends in the field of neuropharmacology. Articles are related to topics discussed during the lecture portion of the course. In assigning each of you an article to present, you will also have a chance to learn from each other. My expectation is that each presentation will contain sufficient background information to enable everyone to follow the details of the presented article. In many cases this will require that you delve into the literature from sources outside of the article. It is my expectation that we as a group can discuss the article and this **requires that we have all read it** prior to class. Here are some guidelines:

1. Choose an article and send it to me to approve by the first two weeks of class. When selecting an article try to find articles that are relatively recent (2020 or later). Both research and review articles are accepted. **Try to align your article with the weekly topic.**
2. All articles will be uploaded on Blackboard, and everyone is expected to read the weekly article prior to class and be engaged in the discussion.
3. Each presentation should last approximately 45 min. This does not include the time needed for Q&A and discussion afterwards.
4. As a presenter, try to foster interaction during your presentation. This means going beyond just stating the stated results of the article and exploring unanswered questions, etc. You may also want to have stated discussion points at the end of the presentation.