

PHARMACOLOGY 290
“Topics in Molecular and Cellular Pharmacology”
Spring 2021 Syllabus

Course Director: Benedek Erdos, MD, PhD
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Class Time: Tuesday / Thursday, 2:50 – 4:05 PM

Location: Synchronized remote on Zoom: <https://uvmcom.zoom.us/j/96223826339>
Passcode: PHRM290

Course Description:

Pharmacology 290 will be offered by the Department of Pharmacology to advanced undergraduates and graduate students in the Spring Semester, 2021. This three credit-hour, team-taught course focuses on basic pharmacological principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromolecules, ion channels, the cytoskeleton, and membrane pumps. Recent studies of the molecular and cellular mechanisms of drug action are discussed, and state-of-the-art techniques for pharmacological analysis of various cellular target molecules are described.

This course is a core requirement for students pursuing the Pharmacology Minor.

Recording Class Sessions:

Our class sessions will be audio-visually recorded for students in the class to refer back to, and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

All Course materials will be loaded onto Blackboard, including links to PowerPoint slides and recordings of lectures.

Grading:

1. *Five closed-book exams:* Exams (100 points each) will be posted on Blackboard and will consist of multiple choice and short essay questions and will cover the material of the preceding 4-5 lectures.
2. *Review Paper:* Mandatory for graduate students taking the course and optional extra credit for undergraduate students (weighted as a 6th exam, 100 points).

The paper should be related to one of the general course topics and be based on at least 3 primary literature references (*not review papers*). Your paper should summarize the background, results, and conclusions of the cited papers, discuss the importance of the papers in the context of the specific topic of interest, and include your assessment of the strengths and possible limitations or weaknesses of the research.

Format: minimum 6 pages, 1” margins, Font size 11, line spacing 1.5.

The paper is due on April 27th, please inform Dr. Erdos by April 16th of your intent to submit a paper and indicate the topic of your review.

3. iClicker test questions during lectures: To encourage participation during synchronous remote lectures, three to five *iClicker* questions will be presented during each lecture. Answering a test question during the polling period is worth one point, choosing the correct answer is worth another point. Total points collected during the lectures will be converted to extra credits and added to the average score of exams and paper to improve final grade. (Extra credit points = percentage of collected vs total available *iClicker* points divided by 20). To take advantage of this option, students need to register for *iClicker/REEF*. See: [UVM information on iClicker/REEF](#)

Schedule of Lectures; Spring 2021:

<u>Date</u>	<u>Topic</u>	<u>Instructor</u>
2/2	G-protein coupled receptors	Erdos
2/4	The Function and Pharmacology of Receptor Kinases - I	Morielli
2/9	The Function and Pharmacology of Receptor Kinases - II	Morielli
2/11	Hormone receptors	Carr
2/16	Transcription factors	Lounsbury
2/18	EXAM I	
2/23	Monoclonal antibodies as therapies (<i>including COVID-19</i>)	Lounsbury
2/25	Vaccine Development (<i>including COVID-19</i>)	Lounsbury
3/2	<i>No class - Town meeting day recess</i>	
3/4	Cyclic AMP/PKA signaling	Sancho
3/9	Cyclic GMP signaling, nitric oxide	Mughal
3/11	Cell adhesion & cytoskeletal dynamics	Howe
3/16	EXAM II	
3/18	Calcium channels	Klug
3/23	Potassium channels	Sancho-Gonzalez
3/25	IP3 and Ryanodine receptors	Hennig
3/30	Chloride channels	Harraz
4/1	EXAM III	
4/6	Nicotinic receptors	Morielli
4/8	Synaptic pharmacology and neurotransmission - I	Erdos
4/13	Synaptic pharmacology and neurotransmission - II	Erdos
4/15	<i>No class - Reading/Respite Day</i>	

4/20	Ocular pharmacology, retinopathy	Klug
4/22	EXAM IV	
4/27	Central control of the cardiovascular system	Erdos
4/29	Vascular function and disease	Mughal
5/4	Pharmacophysiology of the kidney	Erdos
5/6	Renin-angiotensin system	Erdos
5/11	Pharmacogenetics – pharmacogenomics	Erdos
5/13	EXAM V	

Pharmacology 290 Faculty list; Spring 2021

Faculty	Department	Telephone	E-mail
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