

NEUR327/Cellular, Neurophysiological, and Pharmacological Neuroscience

Summer 2022-ONLINE Synchronous

INSTRUCTOR: N KABBANI

Contact Information: nkabbani@gmu.edu

Online meeting times: MWF 8:30-11AM

Meeting coordinates: <https://gmu.zoom.us/j/97690853319?pwd=My96TldLV2FkVnFNbXRhWDBqR3RUQT09>

OBJECTIVE: This is a fundamental neuroscience course that presents basic concepts of cellular and molecular neuroscience. We will study key topics in neuronal function, including the structure of neurons, the functions of cell membranes, regulation of electrical properties, and intracellular signaling that participates in synaptic plasticity. Reading of the textbook (**Neuroscience 5/e, Purves et al. or any other edition**) is highly recommended.

Attendance: This is a **Synchronous online course therefore your attendance of the Zoom meetings is required** throughout unless you have permission of the instructor.

GRADING: Your grade will be calculated based on 3 exams @ 25% each and a group presentation @ 25%.

ONLINE EXAM INFO: Your exams will be available via Blackboard at 8AM on the scheduled day. The exam will remain available until 4PM that day. The exams are timed to 90 minutes, and you will have 2 attempts to complete the exam, with the better score recorded. The exam **is not** open book or open notes, and you are asked to use the GMU Honor Code throughout the exam.

Group Presentation

You will be divided into 7 groups on the first day of class. You are expected to work together as a team to prepare a 30 min presentation on the assigned topic. I am happy to meet with each group to go over planning. You will be graded based on the below rubric.

Group 1: Name 3 famous neuroscientists and summarize their work.

Group 2: What are microglia? What diseases can they contribute to?

Group 3: What are memories? How and where are they stored?

Group 4: How are the brains of men and women different? How are they similar?

Group 5: How does serotonin regulate your mood? Which diseases is it involved in?

Group 6: What is epigenetics? How do epigenetic changes effect your brain?

Group 7: What is brain-machine interface technology? Give a few examples.

Presentation Rubric (25% of your grade)

Criteria	Strong (12.5)	Average (10)	Below average (8)
Content (12.5pts)	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 a number of unanswered questions.
Delivery (12.5pts)	Well prepared. Slides were clear. The presenter answered all questions.	Minor aspects of the presentation (visual or verbal) were not clear.	Presentation lacked clarity or poorly prepared slides

Class SCHEDULE

<p>Week of May 23, 2022 M: Introduction to the Course W: Studying the Nervous System Ch.1 F: Electrical Signals of Nerve Cells, Ch.2</p>
<p>Week of May 30, 2022 M: Voltage Dependent Membrane Permeability, Ch.3/Group 1 W: Channels and Transporters, Ch. 4/Group 2 F: EXAM 1 (Ch. 1-4)</p>
<p>Week of June 6, 2022 M: Synaptic Transmission, Ch.5/Group 3 W: Synaptic Transmission, Ch.5/ Neurotransmitters and their Receptors, Ch.6/Group 4 F: Neurotransmitters and their Receptors, Ch.6/Group 5</p>
<p>Week of June 13, 2022 M: EXAM 2 (Ch. 5 & 6) W: Molecular Signaling within Neurons, Ch. 7/Group 6 F: Molecular Signaling within Neurons, Ch. 7/Group 7</p>
<p>Week of June 20, 2022 M: Synaptic Plasticity, Ch.8 W: Synaptic Plasticity, Ch.8 F: FINAL EXAM (Ch. 7 & 8)</p>