

# NEUR327- Cellular, Neurophysiological, and Pharmacological Neuroscience

Fall 2019

MW 10:30-11:45, Art & Design Bldg. 2003

## **INSTRUCTOR:** N KABBANI

Contact Information: nkabbani@gmu.edu, 3-4406

Office Hours: M, 12–1:00 pm, or by appointment

Office Location: Krasnow Institute, Room 233

**Course Objective:** This is a core neuroscience course that presents important concepts in cellular and molecular neuroscience. In this course we will survey neuronal properties as subcellular organization, membrane associated function, electrical and signaling activity. We will explore how these properties contribute to neural mechanisms of synaptic plasticity during development, learning, and repair. By the end of the course you should have a strong understanding of how neurons operate in various context.

**Text and Notes:** Neuroscience 5/e, Purves et al. (Older editions are acceptable). Chapter related slide templates are provided on Blackboard. These slides are templates are however not complete and should be used for note taking.

## **GRADING**

There will be 2 exams and a comprehensive final. Each exam is worth 30% while the comprehensive is worth 40% of the grade. All exams are multiple-choice and require a scantron.

**Grading policy:** A score of 90 or above **generally** results in a grade of A or above, 80 or above corresponds to a B or above, and 70 or above results in C or above. The final grades may be determined on a curve if this is to the students favor and justified in the opinion of the instructor. **Make-up exams are not allowed.** There will be 4 Breakout Session exercises during the course of the semester. These exercises are student lead, participation is mandatory, and absence will result in (up to) a 10 point deduction from the final grade.

**HONOR CODE:** All exams and reports must follow the guidelines of the GMU Honor Code as described in the GMU catalog.

**Course Schedule:** The below schedule is subject to change.

<p><b>Week 1</b>  August 26: Studying the Nervous System Ch.1  August 28: Studying the Nervous System Ch.1</p>
<p><b>Week 2</b>  <b>September 2: No class, Labor Day</b>  September 4: Electrical Signals of Nerve Cells, Ch.2</p>
<p><b>Week 3</b>  September 9: Electrical Signals of Nerve Cells, Ch.2  September 11: Voltage Dependent Membrane Permeability, Ch.3</p>
<p><b>Week 4</b>  September 16: Voltage Dependent Membrane Permeability, Ch.3  <b>September 18: Breakout Session 1</b></p>
<p><b>Week 5</b>  September 23: Channels and Transporters, Ch.4  September 25: No Class</p>
<p><b>Week 6</b>  <b>September 30: Exam 1, Chapters 1-4</b>  October 2: Synaptic Transmission, Ch. 5</p>
<p><b>Week 7</b>  October 7: Synaptic Transmission, Ch. 5  October 9: Neurotransmitters and their Receptors, Ch.6</p>
<p><b>Week 8</b>  <b>October 14: No class, Columbus Day</b>  <b>October 16: Breakout Session 2</b></p>
<p><b>Week 9</b>  October 21: Neurotransmitters and their Receptors, Ch.6  October 23: Neurotransmitters and their Receptors, Ch.6</p>
<p><b>Week 10</b>  October 28: Molecular Signaling within Neurons, Ch.7  October 30: Molecular Signaling within Neurons, Ch.7</p>
<p><b>Week 11</b>  November 4: Review Day  <b>November 6: Exam 2, Chapters 5-7</b></p>
<p><b>Week 12</b>  November 11: Synaptic Plasticity, Ch.8  November 13: Synaptic Plasticity, Ch.8</p>
<p><b>Week 13</b>  November 18: <b>No class, SFN Annual Meeting</b>  November 20: Synaptic Plasticity, Ch.8</p>
<p><b>Week 14</b>  <b>November 25: Breakout Session 3</b>  November 27: <b>No class, Thanksgiving</b></p>
<p><b>Week 15</b>  <b>December 2: Breakout Session 4</b>  December 4: Review Day</p>

FINAL EXAM: December 11, 10:30-1:15