

## Syllabus Fall 2024

### Cellular, Neurophysiological, and Pharmacological Neuroscience

**NEUR327.001 & BENG327.001\_MW @ 10:30-11:45 AM**

**NEUR327.002 & BENG327.002\_MW @ 12:00-1:15 PM**

**All sections meet at East Hall, Room 122**

Instructor: Ted Dumas

Contact Information: tdumas@gmu.edu, 3-9170

Office Hours: Monday, 2:30 – 3:30pm or by appointment

Office Location: Krasnow Hall, Room 109

Last day to add: 09/03/2024

Last days to drop: 09/09/2024 (0% tuition liability), 09/17/2024 (50% tuition liability)

### COURSE INFORMATION

#### Course Objectives

This is a core neuroscience course. At the end of the course, students will understand basic concepts of cellular and physiological neuroscience. Some neuropharmacology will be covered in so far as drugs have been effective in elucidating the function of individual neurons and brain circuits. The scope of the course will include an in-depth survey of neuronal properties, including morphology, membrane physiology, electrical properties of neurons, intracellular and intercellular signaling, and synaptic transmission and plasticity.

#### Education Mode

This class will be delivered in person. There is no remote option.

#### Textbook

Neuroscience, Purves et al., 7<sup>th</sup> Edition, Sinauer Associates, Inc.

#### Grading

There will be a total of three scheduled exams, one being your final examination. Exam 1 will contribute 20% and Exams 2 and 3 each contribute 40% of your final grade. There are no make-up exams. **Changes to exam dates or times or make-up exams are not allowed unless the student presents written medical documentation in advance of the exam.**

Medical documentation for or from a family member or friend is not sufficient to request a make-up exam.

#### Homework

There will be eleven homework assignments, each counting as one exam point. These assignments are not graded, but they must be completed and submitted on time for credit.

**Assignments are due by 10pm on Sunday** on the dates listed on the calendar below.

#### Grading Policy

A score of 90% or above generally results in a letter grade of A- or above, 80 or above corresponds to a B- or above, and 70 or above results in a C- or above. These number-to-letter grade conversions serve as a guideline and are not absolute. The final grades may be determined on a curve if this is in the students favor and justified in the opinion of the instructor.

#### GMU Email Accounts

Students must use their Mason (@gmu.edu) email accounts to receive important University information, including messages related to this class.

## **Academic Integrity**

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously. Violations have penalties. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

## **Class Policies**

The instructor of this course reserves the right to enter a failing grade to any student found guilty of an honor code violation. Use of cell phones, pagers, and other communicative devices is not allowed in class. Please keep these devices out of sight. Laptops or tablets may be permitted for the purpose of taking notes only. Regarding electronic devices (such as laptops, cell phones, etc.), please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions show a lack of professionalism and may affect your grade.

## **USEFUL CAMPUS RESOURCES**

### **Office of Disability Services**

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students. If you are seeking accommodations for this class, please first visit <https://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: [ods@gmu.edu](mailto:ods@gmu.edu) | Phone: (703) 993-2474

### **Writing Center**

Johnson Center, Floor 2, Room 227E; (703) 993-1200 – <https://writingcenter.gmu.edu>

### **University Libraries**

"Ask a Librarian" – <http://library.gmu.edu/ask>

### **Counseling and Psychological Services (CAPS)**

(703) 993-2380 – <http://caps.gmu.edu>

### **University Policies**

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>. All members of the university community are responsible for knowing and following established policies.

Week of Semester	Monday	Wednesday
<b>Week 1</b> Aug. 26 <sup>th</sup> , Aug. 28 <sup>th</sup>	Studying the Nervous System, Chapter 1.1	Studying the Nervous System, Chapter 1.2
<b>Week 2</b> (Homework 1: 09/01) Sept. 2 <sup>nd</sup> , Sept. 4 <sup>th</sup>	<b>No Class! Labor Day</b>	Electrical signals of neurons, Chapter 2.1
<b>Week 3</b> (Homework 2: 09/08) Sept. 9 <sup>th</sup> , Sept. 11 <sup>th</sup>	Electrical signals of neurons, Chapter 2.2	Voltage-dependent membrane permeability, Chapter 3
<b>Week 4</b> (Homework 3: 09/15) Sept. 16 <sup>th</sup> , Sept. 18 <sup>th</sup>	Voltage-dependent membrane permeability, Chapter 4.1	<b>No Class!</b>
<b>Week 5</b> Sept. 23 <sup>rd</sup> , Sept. 25 <sup>th</sup>	Ion channels and Transporters, Chapter 4.2	<b>No Class!</b>
<b>Week 6</b> Sept. 30 <sup>th</sup> , Oct. 2 <sup>nd</sup>	Ion channels and Transporters, Chapter 4.3	<b>No Class!</b>
<b>Week 7</b> (Homework 4: 10/06) Oct. 7 <sup>th</sup> , Oct. 9 <sup>th</sup>	<b>Exam 1 Review</b>	<b>Exam 1 (Ch. 1-4)</b>
<b>Week 8</b> (Homework 5: 10/13) Oct. 14 <sup>th</sup> , Oct. 16 <sup>th</sup>	<b>No Class! Fall Break</b>	Synaptic transmission, Chapter 5.1
<b>Week 9</b> (Homework 6: 10/20) Oct. 21 <sup>st</sup> , Oct. 23 <sup>rd</sup>	Synaptic transmission, Chapter 5.2	Synaptic transmission, Chapter 5.3
<b>Week 10</b> (Homework 7: 10/27) Oct. 28 <sup>th</sup> , Oct. 30 <sup>th</sup>	Neurotransmitters and receptors, Chapter 6.1	Neurotransmitters and receptors, Chapter 6.2
<b>Week 11</b> Nov. 4 <sup>th</sup> , Nov. 6 <sup>th</sup>	Neurotransmitters and their protein receptors, Chapter 6.3	<b>Exam 2 Review</b>
<b>Week 12</b> (Homework 8: 11/10) Nov. 11 <sup>th</sup> , Nov. 13 <sup>th</sup>	<b>Exam 2 (Ch. 5-6)</b>	<b>No Class!</b>
<b>Week 13</b> (Homework 9: 11/17) Nov. 18 <sup>th</sup> , Nov. 20 <sup>th</sup>	Molecular signaling within neurons, Chapter 7.1	Molecular signaling within neurons, Chapter 7.2
<b>Week 14</b> (Homework 10: 11/24) Nov. 25 <sup>th</sup> , Nov. 27 <sup>th</sup>	Sensory Transduction, Chapters 9,10,11,13,15	<b>No Class! Thanksgiving</b>
<b>Week 15</b> (Homework 11: 12/01) Dec. 2 <sup>nd</sup> , Dec. 4 <sup>th</sup>	Synaptic plasticity, Chapter 8.1	Synaptic plasticity, Chapter 8.2&8.3
<b>Final Exams</b> Dec. 9 <sup>th</sup> , Dec. 11 <sup>th</sup>	<b>Final Exam Review</b>	<b>Final Exam Section 001</b> 10:30am - 1:15pm
<b>Final Exams</b> Dec. 16 <sup>th</sup>	<b>Final Exam Section 002</b> 10:30am - 1:15pm	