

## Syllabus

### Cellular, Neurophysiological, and Pharmacological Neuroscience NEUR 327 / BENG 327 \_\_ Fall 2021

Section 001, MW: 10:30-11:45 AM, Art & Design Bldg. L008

Section 002, MW: 12:00-1:15 PM, Blueridge Hall 129

Instructor: Ted Dumas

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

Office Hours: Tuesday, 10:30-11:30AM or by appointment

Office Location: Krasnow Hall, Room 109

Graduate Teaching Assistant (GRA): Diego Gonzalez

Contact Information: dgonza3@gmu.edu

Office Hours: Thursday, 2:00-4:00PM or by appointment

Office Location: Krasnow Hall, Room 143

#### Course Objectives:

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

#### Education Mode:

This class will be delivered in person! at designated times and places for each section that are specified at the top of this syllabus. The lectures will also be broadcast via zoom as a secondary delivery method. Here is the attendee link:

<https://gmu.zoom.us/j/94615967850>

#### Text:

Neuroscience, Purves et al., 6<sup>th</sup> Edition, Sinauer Associates, Inc.

#### Covid-19 Stuff:

Masks are required at all times while indoors regardless of vaccination status. If you have a disability accommodation of some sort with a contact sheet from Office of Disabilities stating such (<https://ds.gmu.edu/response-to-covid-19/>), please notify me so I don't ask you to put on a mask in class. Masks are available at the SUB I information desk and HUB Suite 2300. If you do not have a formal disability accommodation and refuse to wear a mask, I am obligated to call campus police (703-993-2810).

#### Grading:

There will be a total of three scheduled exams, one being your final examination. Exams 1 and 2 each contribute 30% of your final grade. The final exam is worth 40% of your final grade. There are no make-up exams.

#### 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 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. Make-up exams are not allowed unless the student has written medical documentation. Please do not put the instructor in a difficult position by missing an exam and requesting a make-up without written medical documentation.

#### 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.

#### GMU Email Accounts:

Students must use their Mason email accounts to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information.

#### OFFICE OF DISABILITY SERVICES

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. <http://ods.gmu.edu>

#### OTHER USEFUL CAMPUS RESOURCES:

WRITING CENTER: A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>

UNIVERSITY LIBRARIES "Ask a Librarian"  
<http://library.gmu.edu/mudge/IM/IMRef.html>

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.

#### 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 are not allowed in this class. Please keep them stowed away and out of sight. Laptops or tablets (e.g. iPads) 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.*

<b>Week of Semester</b>	<b>Monday</b>	<b>Wednesday</b>
<b>Week 1</b> Aug. 23 <sup>rd</sup> , Aug. 25 <sup>th</sup>	Studying the Nervous System, Chapter 1.1	Studying the Nervous System, Chapter 1.2
<b>Week 2</b> Aug. 30 <sup>th</sup> , Sept. 1 <sup>st</sup>	Electrical signals of neurons, Chapter 2.1	Electrical signals of neurons, Chapter 2.2
<b>Week 3</b> Sept. 6 <sup>th</sup> , Sept. 8 <sup>th</sup>	<b>Labor Day – No class!</b>	Voltage-dependent membrane permeability, Chapter 3
<b>Week 4</b> Sept. 13 <sup>th</sup> , Sept. 15 <sup>th</sup>	Voltage-dependent membrane permeability, Chapter 4.1	Ion channels and Transporters, Chapter 4.2
<b>Week 5 (OLLI**)</b> Sept. 20 <sup>th</sup> , Sept. 22 <sup>nd</sup>	<b>Start at 10:45</b> Ion channels and Transporters, Chapter 4.3	<b>Exam 1 Review</b>
<b>Week 6</b> Sept. 27 <sup>th</sup> , Sept. 29 <sup>th</sup>	<b>Exam 1 (Ch. 1-4)</b>	Synaptic transmission, Chapter 5.1
<b>Week 7</b> Oct. 4 <sup>th</sup> , Oct.6 <sup>th</sup>	Synaptic transmission, Chapter 5.2	<b>IBP No Class!</b>
<b>Week 8</b> <b>Tues Oct. 12<sup>th</sup></b> , Oct 13 <sup>th</sup>	<b>IBP No Class!</b>	<b>IBP No Class!</b>
<b>Week 9</b> Oct. 18 <sup>th</sup> , Oct. 20 <sup>th</sup>	Synaptic transmission, Chapter 5.3	Neurotransmitters and receptors, Chapter 6.1
<b>Week 10</b> Oct. 25 <sup>th</sup> , Oct. 27 <sup>th</sup>	Neurotransmitters and receptors, Chapter 6.2	Neurotransmitters and their protein receptors, Chapter 6.3
<b>Week 11</b> Nov. 1 <sup>st</sup> , Nov. 3 <sup>rd</sup>	<b>Exam 2 Review</b>	<b>Exam 2 (Ch. 5-6)</b>
<b>Week 12</b> Nov. 8 <sup>th</sup> , Nov. 10 <sup>th</sup>	Molecular signaling within neurons, Chapter 7.1	Molecular signaling within neurons, Chapter 7.2

<b>Week 13</b> Nov. 15 <sup>th</sup> , Nov. 17 <sup>th</sup>	<b>Society for Neuroscience – No Class!</b>	Sensory Transduction, Chapters 9,10,11,13,15
<b>Week 14</b> Nov. 22 <sup>nd</sup> , Nov. 24 <sup>th</sup>	Synaptic plasticity, Chapter 8.1	<b>Thanksgiving – No Class!</b>
<b>Week 15</b> Nov. 29 <sup>th</sup> , Dec 1 <sup>st</sup>	Synaptic plasticity, Chapter 8.2	Synaptic plasticity, Chapter 8.3
<b>Final Exams</b> Dec. 6 <sup>th</sup> , Dec. 8 <sup>th</sup>	<b>Final Exam Review</b>	<b>Section 1_Final Exam (Ch. 7-8), 10:30am - 1:15pm</b>
<b>Final Exams</b> Monday Dec. 13 <sup>th</sup>	<b>Section 2_Final Exam (Ch. 7-8), 10:30am - 1:15pm</b>	