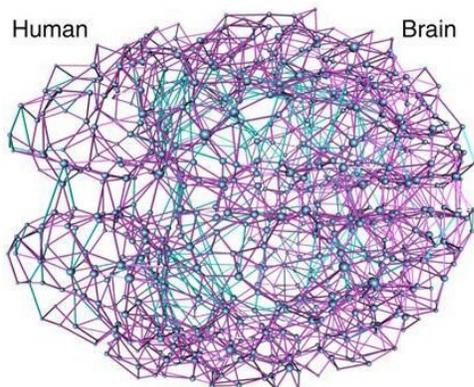


NEUR 335 – Molecular, Developmental, and Systems Neuroscience  
Spring 2026 - Section 02



Instructor: Dr. L. Ren Guerriero (they/them)

Their email: [lguerrie@gmu.edu](mailto:lguerrie@gmu.edu)

Their phone #: 703-993-5901

Meeting times: Tues/Thurs 10:30 -11:45 am EST

Meeting location: Peterson 1113

Office Hours: Make an appointment

Office Location: Krasnow 253 and Zoom

### What is this class?

This course is one of the required Neuroscience courses for majors. Developmental neuroscience is the study of the cellular and molecular events during embryonic development of the nervous system. We will cover patterning of the nervous system, cell differentiation, axon guidance, synapse formation, and neural death. Systems neuroscience involves the study of **neural circuits**, organized into sensory and motor systems, whose activity gives rise to complex functions. For each of these systems, pathways of **information flow**, **information processed** at each level, **overall function**, and consequences of **injury/damage** will be discussed. Students are also expected to become familiar with the scientific methods used to tackle questions in developmental/systems neuroscience as well as current questions and/or controversies in the field.

### What will I get out of this class?

Learning Outcomes:

- (1) Describe molecules and pathways responsible for neurodevelopmental processes.
- (2) Outline the specific pathways through which sensory information is transmitted from peripheral receptors to brain regions for higher -order processing and integration.
- (3) Outline the specific pathways within the brain and spinal cord responsible for control of simple and complex motor behaviors.
- (4) Gain an appreciation for the clinical applicability of developmental and systems neuroscience research.
- (5) Begin to hone skills in communicating about peer -reviewed developmental or systems neuroscience research to a wider audience.

### How do I do well in this class?

This class relies heavily on material presented in the book. You are expected to read the chapters and the material presented in lecture will be over that content. I recommend skimming the chapter before we talk about them in class, and then reading again after lecture and when doing classroom activities. Also, communication is key to doing well in this course. You will be graded on your written and oral communication, but communication is necessary when you are confused in class. To make sure we all know how to act in class, our first day we will write and vote on a code of conduct, which will then be added to the syllabus. This will

include both instructor and student responsibilities. It is then our job to uphold ourselves and others to the code of conduct.

#### Required Textbook:

Purves, D., et al. (2017) *Neuroscience, 6th Edition*. Sinauer Associates. ISBN: 9781605353807  
Online Resources: [oup-arc.com/access/purves-6e](http://oup-arc.com/access/purves-6e) (includes animations, flashcards, etc.)

OR

Augustine, G.J., et al., (2023) *Neuroscience, 7th Edition*. Oxford University Press. ISBN: 0197616682

#### What are our responsibilities? (Code of Conduct)

These will be written and voted on in our first meeting of the class.

#### Student responsibilities:

- The [Family Educational Rights and Privacy Act \(FERPA\)](#) governs the disclosure of [education records for eligible students](#) and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.
- Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.
  - As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:
    - **Honesty** : Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
    - **Acknowledgement** : Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
    - **Uniqueness of Work** : Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

- Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university’s [academic standards procedures](#). Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

Instructor responsibilities:

- COVID Policies: All students, instructors, and TAs are required to follow the university’s public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). Similarly, all students, instructors, and TAs in face-to-face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system and students will receive either a Green, Yellow, or Red email response. Only students, instructors, and TAs who receive a “green” notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class.
- As a part of George Mason University’s commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the “Complainant”) will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.
  - For more information about non-confidential employees, resources, and Prohibited Conduct, please see [University Policy 1201: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence](#). Questions regarding Title IX can be directed to the Title IX Coordinator via email to [TitleIX@gmu.edu](mailto:TitleIX@gmu.edu), by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

How will I be graded in this class?

Grading Scale:

A+ 97-100%	B+ 87-89%	C+ 77-79%	D 60-69%	F 0-59%
A 93-96%	B 83-86%	C 73-76%		

A- 90-92%

B- 80-82% C- 70-72%

**Chapter Assignments** (13, 12 points) – For every chapter you will be assigned either an in-class activity or out of class quiz to take. These are designed to get you thinking more deeply about lecture content and apply to other situations. Some examples of assignments are analyzing case studies, completing an in-class activity, or interpreting data. Quizzes will be completed online using Canvas and are open source, with a time limit of 20 minutes (so make sure your notes are organized well and you studied them).

**Exams** (3, 50 points) – There will be a total of three exams consisting of multiple choice, fill in the blank, and short answer questions. Exams are on paper in class, not open book/note, and will be timed. There is an optional cumulative final exam which may be taken to replace the lowest of your 3 exam scores.

**News & Views Report** (30 points) You will hone your written communication skills by writing a 1-2 page "News & Views" style summary of a primary research paper. Sample reports and guidelines are posted on Canvas. These reports may be submitted at any time leading up to the deadline; all reports must be uploaded to Canvas no later than April 16.

**Participation and Assignments** (50 points) – Attending class is an essential component of the learning process for the majority of students. The instructor will be monitoring your attendance and participation in the class. If you do not work with your group, raise questions during lecture, or are absent (unexcused), you will not receive credit for the day.

#### I missed class or an assignment, what do I do?

Life is unpredictable and illness (both physical and mental) should be taken seriously. If you know you will not be in class, email Dr. Guerriero. Holidays, illnesses, and university sanctioned events likely count as an excused absence, but only if you notify Dr. Guerriero either before the event or as soon as you decide you're too ill to come to class. Next, if you miss class, look at Canvas for the information covered in class. If the slides are confusing, email Dr. Guerriero.

#### Missed Assignments

- "Life Happens Pass" – For one written assignment this semester you can get an automatic 48-hour extension on the due date, no questions asked. **You must inform Dr. Guerriero in writing (email) to get this pass.**
- All other missed assignments will get a 20% deduction for being late. It is to your benefit to turn in assignments late, no matter how long it takes. Most of the points are better than no points! You have until **April 30th** for all assignments to be turned in for partial credit.

#### I'm struggling in this class. How do I get help?

**I don't understand the class material, assignments, my grades** – email Dr. Guerriero. When emailing us, you have to use your gmu.edu email account or we cannot verify that the email came directly from you.

**I'm stressed, anxious, angry, or mentally unwell** – [Counseling and Psychological Services](#) have drop-in hours or virtual services, including a text line, online chat, and video chats. If its outside business hours, they have an after-hours crisis counselor (call 703-993-2380 and select option 1).

**I need help with time management, note taking, or other study skills** – Talk to Dr. Guerriero or reach out to [Learning Services](#) for a personalized appointment and online tools.

**I'm struggling with social issues that impact my identity, my culture, or me personally** – College and higher education is inherently exclusionary, racist, sexist, and classist, and I'm committed to helping change that. Mason is also committed to this, with lots of resources:

[Center for Culture, Equity, and Empowerment](#) (includes bias incident reporting form)

[First-Gen+ Center](#) (resources for first-generation, undocumented, refugee, and limited income students)

[LGBTQ+ Resources Center](#) (including crisis, community, and gender transition resources)

[Student Support and Advocacy Center](#) (resources for financial help, sexual and interpersonal violence support, and drug/eating disorder recovery)

**I need class accommodations for a disability, illness, or other reason** – First talk to [Disability Services](#) office. They will meet with you virtually and help you with your individual needs. Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

### Tentative Schedule – Spring 2026

Subject to change (check Canvas for the most recent version)

Last Day to Add – Jan 27

Last Day to Drop – Feb 3 (100% refund), Feb 10 (50% refund)

Date	What we are discussing	How to prep for class (6 <sup>th</sup> ed., 7 <sup>th</sup> ed.)	When are things due?
Week 1 – Jan 20	- Code of Conduct	- Read syllabus	
Jan 22	- Early Brain Development	- Read Ch 22, 22	
Week 2 – Jan 27	- Early Brain Development	- Read Ch 22, 22	
Jan 29	- Construction of Neural Circuits	- Read Ch 23, 23	- Early Brain Dev. Quiz due Jan 28 at 11:59 pm
Week 3 – Feb 3	- Construction of Neural Circuits	- Read Ch 23, 23	- Ch 23 assignment due Feb 2 at 11:59 pm
Feb 5	- Vision	- Read Ch 11, 9.1 to 9.3	Ch 23 resubmission due Feb 4 at 11:59 pm
Week 4 – Feb 10	- Vision	- Read Ch 12, 9.4 to end	- Vision Quiz due Feb 9 at 11:59 pm
Feb 12	- Central Visual Pathways	- Read Ch 12, 9.4 to end	- Visual System: Assignment due Feb 11 at 11:59 pm
Week 5 – Feb 17	- Exam 1 Prep	- Bring questions	
Feb 19	- Exam 1	- Study	
Week 6 – Feb 24	- Central Visual Pathways	-	
Feb 26	- Auditory System	- Read Ch 13, 10	
Week 7 – Mar 3	- Auditory System - Vestibular System	- Read Ch 14, 11	Auditory System Assignment due Mar 4 at 11:59 pm
Mar 5	- Vestibular System	- Read Ch 14, 11	
Week 8 - Mar 10 Mar 12	- Spring Recess. Relax and get some sleep		
Week 9 - Mar 17	- Olfaction	- Read Ch 15 pg 323-345, 14	- Vestibular Quiz due Mar 16 at 11:59 pm

Date	What we are discussing	How to prep for class (6 <sup>th</sup> ed., 7 <sup>th</sup> ed.)	When are things due?
Week 1 – Jan 20	- Code of Conduct	- Read syllabus	
Mar 19	- Gustation	- Read Ch 15 pg 345-354, 15	- Ch 15 Quiz due Mar 18 at 11:59 pm
Week 10 - Mar 24	- Somatosensory System	- Read Ch 9, 12	- Ch 9 Mini-Lessons due Mar 23 at 11:59
Mar 26	- Somatosensory System - Pain	- Read Ch 9, 12 - Read Ch 10, 13	- Ch 10 Quiz due Mar 25 at 11:59 pm
Week 11 – Mar 31	- Exam 2 Prep	-	
Apr 2	- Exam 2	- Study	
Week 12 – Apr 7	- Lower Motor Neurons	- Read Ch 16, 16	- Ch 16 Case Study due Apr 6 at 11:59 pm
Apr 9	- Lower Motor Neurons	- Read Ch 17, 17	
Week 13 – Apr 14	- Upper Motor Neurons	- Read Ch 17, 17	- Ch 17 Assignment due Apr 13 at 11:59 pm
Apr 16	- Upper Motor Neurons - Basal Ganglia	- Read Ch 18, 18	- News and Views paper due Apr 15 at 11:59 pm
Week 14 – Apr 21	- Basal Ganglia	- Read Ch 18, 18	- Ch 18 Assignment due Apr 20 at 11:59 pm
Apr 23	- Cerebellum	- Read Ch 19, 19	- Cerebellum Quiz due Apr 22 at 11:59 pm
Week 15 – Apr 20	- Cerebellum - Exam 3 Prep	- Bring questions	
Apr 30	- Exam 3	- Study	
Finals – May 5	- Optional Final Exam Prep	- Bring questions	
May 12	- Optional Final Exam (All Chapters)	- Study	Final from 10:30 – 1:15 pm