NEUR 101 – Introduction to Neuroscience
Spring 2025; Section 002
HYBRID

Instructor: Dr. Sarojini Manju Attili
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Meeting time: Tuesdays 10:30-11:45 am EST
Meeting location: Horizon; 3014, Fairfax
Office Hours: Tuesdays between 11:45 am and 1 pm, KB 254

Course Overview:
The nervous system controls everything we think, do, and feel. But how does it do this? And what happens when things go wrong? In this course, we will answer these questions by introducing the study of the brain (neuroscience). We will cover basic concepts in neuroscience such as neurons, action potentials, and synapses and examine their involvement in everyday life. We will explore what neuroscience has already uncovered about human development, aging, and disease. This course is meant to serve as an introduction to neuroscience for students of all majors.

Materials needed: No textbook is required. Open educational resources will be provided from various sources.

Technological Requirements: Access to Canvas, email and an internet browser (for reading, researching and taking tests).

Course Learning Outcomes:

Natural Science Core Learning Goals. After completion of this course, students will be able to:
1. Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding.
- evolves based on new evidence
- differs from personal and cultural beliefs

2. Recognize the scope and limits of science.
3. Recognize and articulate the relationship between the natural sciences and society and the application of science to societal challenges (e.g., health, conservation, sustainability, energy, natural disasters, etc.).
4. Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information).

Neuroscience-specific learning goals. After completion of this course, students will be able to:

5. Describe how the human nervous system is organized from development into adulthood.
6. Understand the key mechanisms of brain activity such as action potentials and brain waves.
7. Describe how the brain mediates our daily activities from sleep to eating to remembering.
8. Appreciate how the nervous system controls complex activities such as movement.
9. Understand the basis of key human brain diseases such as Alzheimer's and Parkinson's Disease.
10. Find and interpret various types of scientific literature, distinguish the quality of and relevance of sources.
11. Evaluate current ethical debates in neuroscience.
12. Describe how current technology is used to advance understanding in neuroscience.

Grading Scale:

A+ 97-100% A 93-96% A- 90-92%	B+ 87-89% B 83-86% B- 80-82%	C+ 77-79% C 73-76% C- 70-72%	D 60-69%	F 0-59%

Grading:

12 Quizzes & 8 Activities (5 points each)	100 points
Neuroscience and Society Project	40 points
Exams (3 @ 50 points each)	150 points
Attendance	10 points
Total	300 points

Quizzes and Activities: At the end of each weekly lesson, you will take a quiz covering that week's material. Quizzes will be open note and are not timed. These are meant to serve as practice for exams. Most weeks there will also be an activity to complete. These could be discussion boards, blog posts, short papers, etc.

Neuroscience and Society Project: The goal of this assignment is to apply your new knowledge of neuroscience to examine a current problem or social issue. Possible problems include:

- Drug and behavioral treatment for a mental illness in children
- Animal models of human brain disease (examples: Alzheimer's Disease, Schizophrenia)
- Human-machine interface technologies
- Treatment for nervous system disease
- Genetic testing for brain disease and/or intelligence
- Gene editing to treat brain disease

You will research your topic through primary scientific literature and prepare an informational flyer that defines and examines the problem through the lens of scientific evidence. Further details of the project will be provided.

Exams: There will be a total of three non-cumulative exams consisting of multiple choice, fill in the blank, and/or short answer questions. Exams will be taken in class. There will also be an OPTIONAL cumulative final exam that can be used to replace a low score on Exam 1, 2 or 3. Exams will be timed. There will be no make-ups allowed for missed exams. Contact the instructor in the first two weeks of the semester if you have accommodations that allow for extra time and review the 'Disability Accommodations' section below.

Attendance: There are a total of 12 lectures in the semester. You will receive 1 point for attending each lecture on time (by 10:30 am). You can earn up to 10 attendance points (which means you will be excused for being absent for two lectures). You will not receive points if you are late to class.

Course Calendar

Last Day to Add – Jan 28
Last Day to Drop – Feb 4 (100% refund), Feb 11 (50% refund)

Week	**Topic**	**Student submissions** (Due on the Sundays following classes except for the optional cumulative exam)
Week 1 Jan 21	Introduction and Cells	• Activity 1 – "Welcome" Discussion board • Week 1 – Quiz 1
Week 2 Jan 28	Development	• Activity 2 – Exploring neuron morphology • Week 2 – Quiz 2
Week 3 Feb 4	Organization of the Nervous System	• Week 3 – Quiz 3
Week 4 Feb 11	Action Potentials and Synapses	• Activity 3 – Crossword puzzle • Week 4 – Quiz 4
Week 5 Feb 18	**Exam 1 (In person)**	
Week 6 Feb 25	Scientific Principles: Evidence-Based Science and Senses part 1	• Activity 4 – Journal article • Week 6 – Quiz 5
Week 7 Mar 4	Senses part 2	• Activity 5 – Sensory disorders • Week 7 – Quiz 6

Week 8 Mar 11	**Spring Break**	
Week 9 Mar 18	Senses part 3 and Movement	• Week 8 – Quiz 7
Week 10 Mar 25	Scientific Principles: Sources & Neuroscience and Society Project Intro	• Activity 6 – Sources • Week 9 – Quiz 8
Week 11 Apr 1	**Exam 2**	
Week 12 Apr 8	Stress, Emotion, Blood, Feeding and Motivation	• Activity 7 – Addiction Discussion • Week 11 – Quiz 9
Week 13 Apr 15	Learning and Memory, Sleep and Circadian Rhythms	• Activity 8 – Spotlight a Scientist • Week 12 – Quiz 10
Week 14 Apr 22	Scientific Principles: Methods, Emerging Technology and Neuroethics	• Week 13 – Quiz 11 • Neuroscience and society project
Week 15 Apr 29	Injury and Disease	• Week 15 – Quiz 12
Week 16 May 6	Reading Day	
Week 17 May 13	**Exam 3**	**Optional cumulative exam**

Student responsibilities:

- Attend all lectures on time & participate in discussions.
- Complete all work by the due dates.
- Be respectful to others, limit distractions in class including side conversations, usage of devices, and don't interrupt.
- Seek help if you are struggling.

Mandatory Attendance: Students are expected to attend class on time and participate in all discussions and activities for the whole duration of each lecture. **There will be no make-up exams**.

Late Work: Unless prior arrangements are made, late work will incur a deduction of 20% and will not be accepted more than two weeks after the due date. No late work will be accepted after **May 4th**. Late exams and exam extensions are not accepted except in cases of emergency or illness. It is imperative that you contact me as soon as possible regarding any issues that may affect your ability to complete assignments.

Class communication: If you need to contact me, please do so using e-mail from your university account only and include the course name in the subject line and include your name in the e-mail. Check your e-mail and course Canvas account daily and before each class meeting. The instructor reserves the right to make any changes to the course she determines academically advisable. I will use e-mail and Canvas to communicate with you regarding changes related to the course, syllabus, and other essential information. You are responsible for all announcements posted and sent via Canvas and e-mail, in addition to announcements made in class.

Writing Center: George Mason University provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) for supporting students as they work to construct and share knowledge through writing. See writingcenter.gmu.edu

Academic Integrity: George Mason has an honor code with clear guidelines for academic integrity. Honesty, expectation and requirement are taken very seriously, and breaches of this trust are treated gravely. Students must be responsible for their own work. When in doubt (of any kind) please ask for guidance and clarification. Cheating of any form is not tolerated. Students and faculty must take on the responsibility of dealing explicitly with violations.

Professional disposition: Students are expected to exhibit professional behavior at all times.

Disability Accommodations: If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 4205; 993-2474; ods.gmu.edu) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs. (Please talk to the Disability Services office first; they will meet with you and help you with your individual needs. We can only activate your accommodation after you talk with Disability Services. Then talk to the instructor.)

Counseling and Psychological Services: George Mason University has a staff of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops, and outreach programs) to enhance students' personal experience and academic performance. See caps.gmu.edu

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.

Mason Diversity Statement*

George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth. An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

* This is an abbreviated statement; full statement is available at http://ctfe.gmu.edu/professional-development/mason-diversity-statement/