NEUR 101 – Introduction to Neuroscience
Spring 2024; Section 002

Instructor: Dr. Sarojini Manju Attili
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Meeting time: Tue 10:30-11:45 am EST
Meeting location: Horizon Building; 5018

Office Hours: By appointment

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 Blackboard, email and an internet browser (for reading and researching).

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:

Quizzes & Activities	25%
Neuroscience and Society Project	15%
Exams (3 @ 20% each)	60%
Total Grade	100%

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. They are not timed and will allow 2 attempts. After the first attempt, you will be able to see which answers were incorrect. The highest grade will be recorded in the grade center. 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. The lowest quiz grade will be dropped.

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 3 in-person exams, with the last exam (non-cumulative) held during finals week. These exams may consist of multiple choice, matching, fill in the blank, or short answer questions. Please contact the instructor if you have accommodations that allow for extra time. Students are allowed one 8.5 x 11 sheet of paper notes (front and back) during the exam. You may also use additional blank scrap paper. You may not use other notes, digital resources, or the internet. Exams will be timed. The lowest grade can be replaced with the optional assignment grade.

Course Calendar

Last Day to Add – Jan 23
Last Day to Drop – Jan 30 (100% refund), Feb 6 (50% refund)

Week	Lessons	Assignments	Due Dates
Week 1 Jan 16 – Jan 22	Introduction & Cells	• Review Syllabus and Course Calendar • Do Week 1 Activity • Take the Week 1 Quiz	Due Sunday 1/21 11:59pm • Week 1 Activity - "Welcome" Discussion board post and 2 comments • Week 1 Quiz
Week 2 Jan 23 – Jan 29	Development	• Do Week 2 Activity • Take the Week 2 Quiz	Due Sunday 1/28 11:59pm • Week 2 Activity • Week 2 Quiz
Week 3 Jan 30 – Feb 5	Organization of the Nervous System	• Do Week 3 Activity • Take the Week 3 Quiz	Due Sunday 2/4 11:59pm • Week 3 Activity • Week 3 Quiz
Week 4 Feb 6 – Feb 12	Action Potentials and Synapses	• Do Week 4 Activity • Take Week 4 Quiz	Due Sunday 2/11 11:59pm • Week 4 Activity • Week 4 Quiz
Week 5 Feb 13 – Feb 19	**Exam 1**	• **In-Person Exam 1**	

Week	Lessons	Assignments	Due Dates
Week 6 Feb 20 – Feb 26	Scientific Principles: Evidence-Based Science	• Do Week 6 Activity • Take Week 6 Quiz	Due Sunday 2/25 11:59pm • Week 6 Activity • Week 6 Quiz
Week 7 Feb 27 – Mar 4	The Senses	• Do Week 7 Activity • Take Week 7 Quiz	Due Sunday 3/3 11:59pm • Week 7 Activity • Week 7 Quiz
Week 8 Mar 5 – Mar 11	Spring Break	No Class	
Week 9 Mar 12 – Mar 18	Movement & Stress	• Do Week 8 Activity • Take Week 8 Quiz	Due Sunday 3/17 11:59pm • Week 8 Activity • Week 8 Quiz
Week 10 Mar 19 – Mar 25	Scientific Principles: Sources & Neuroscience and Society Project Intro	• Do Week 9 Activity • Take Week 9 Quiz	Due Sunday 3/24 11:59pm • Week 9 Activity • Week 9 Quiz
Week 11 Mar 26 – Apr 1	**Exam 2**	• **In-Person Exam 2**	
Week 12 Apr 2 – Apr 8	Emotion, Blood, Feeding and Motivation	• Do Week 11 Activity • Take Week 11 Quiz	Due Sunday 4/7 11:59pm • Week 11 Activity • Week 11 Quiz
Week 13 Apr 9 – Apr 15	Learning and Memory & Sleep and Circadian Rhythms	• Do Week 12 Activity • Take Week 12 Quiz	Due Sunday 4/14 11:59pm • Week 12 Activity • Week 12 Quiz
Week 14 Apr 16 – Apr 22	Scientific Principles: Methods and Emerging Technology & Neuroethics	• Do Week 13 Activity • Take Week 13 Quiz	Due Sunday 4/21 11:59pm • Week 13 Activity • Week 13 Quiz

Week	Lessons	Assignments	Due Dates
Week 15 Apr 23 – Apr 29	Injury and Disease	• Take Week 15 Quiz • Work on Neuroscience and Society Project • Study for Exam 3 • Optional writing assignment	Due Sunday 4/28 11:59pm • Week 15 Quiz
Week 16 Apr 30 – May 6		• Reading Day	Due Sunday 5/5 11:59pm • Neuroscience and Society Project
Week 17 May 7	**Exam 3**	• **In-person Exam 3**	Due Sunday 5/5 11:59pm Optional writing assignment

Student responsibilities:

- Attend all sessions & participate in discussions.
- Complete all work by the due dates.
- Communicate about missing class/assignments with the instructor.
- Be respectful to others, ask questions, and don't interrupt.
- Limit distractions in class including side conversations, phone use, and computer/tablet use.
- 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 quizzes/exams**. Any chapter quiz not taken by the deadline will receive a grade of zero. Because the lowest quiz grade will be dropped, chapter quizzes cannot be made up under any circumstances. Because the lowest exam will be replaced with optional assignment, make-ups are not allowed. Class participation points cannot be made up outside of the classroom.

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 April 30th. 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 Blackboard account daily and before each class meeting. The instructor reserves the right to make any changes in the course she determines

academically advisable. I will use e-mail and Blackboard 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 Blackboard 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/