

NEUR 101: Introduction to Neuroscience

Fall 2019

Instructor: Dr. Gwendolyn (Wendy) Lewis

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Course Time: Monday & Wednesday 1:30pm - 2:40pm

Course Location: Robinson B360

Credits: 3

Office: Krasnow 254

Office Hours: Wednesday 10:00am – 12:00pm

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 providing an introduction to the study of 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. The course is meant to serve as an introduction to neuroscience for students of all majors.

Mason Core: Natural Science, Non-lab

This is a Natural Science, non-lab Mason Core course. This course aims to enhance your understanding of scientific inquiry by introducing you to the tools and methods of neuroscience as well as the application of emerging neurotechnologies for personal, medical, and social purposes.

Natural Science Core Learning Goals

Natural science learning goals and the course activities that support them are listed below.

- Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding:
 - a) evolves based on new evidence
 - b) differs from personal and cultural beliefs
 - Evidence Based Science Unit: lecture, in-class activity, homework assignment
 - Neuroscience and Society Project
- Recognize the scope and limits of science.
 - Evidence Based Science Unit: lecture, in-class activity, homework assignment
 - Neuroscience and Society Project
 - Neuroethics Unit: lecture, in-class activity, homework assignment
- 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.).
 - Neuroscience and Society Project
 - Methods and Emerging Technologies Unit: lecture, in-class activity, homework assignment
- Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information).
 - Evidence Based Science Unit: lecture, in-class activity, homework assignment
 - Sources Unit: lecture, in-class activity, homework assignment
 - Neuroscience and Society Project

Attendance and Make-up Policy

You are expected to attend class and participate in all discussions and activities, but attendance will not be recorded. Attendance is an integral part of this course, and absences will result in significant missed information. **NOTE: You are responsible for all announcements and syllabus modifications made in class each week whether you are present or not.**

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. 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 announcement make in class.

Student Conduct Policies

Be kind and respectful to your classmates, Disruptive, disrespectful, or rude behavior will lead to dismissal from class, a potential deduction of points from the course, and an unhappy me. You will also miss out on all the cool things we do in class!

Cell phones in the classroom: Please silence phones during class. Texting is not allowed. Cell phone use/ringing (other than for emergency) during class may result in deduction of points from the course participation grade.

Computers in the classroom: Each class will have the opportunity to set their own rules regarding the use of computers in the classroom, with anonymous (or not, up to you) student reporting being used as enforcement. Failure of students to observe their own rules will result deduction of points from the course.

Academic Integrity

Honesty and integrity are issues at the very core of this course and of science as a whole. George Mason has an honor code with clear guidelines for academic integrity. A few of the most important rules that pertain to this course are as follow: 1) All work submitted must be your own should be done individually unless explicitly stated otherwise. You will be encouraged to discuss ideas, collaborate, and brainstorm with your classmates, but actual assignments need to be completed individually. 2) When referencing the work of others (this includes published and non-published work or ideas), full credit must be given through appropriate citations. 3) If you are ever unsure about the rules for an assignment, ask for clarification. Cheating and plagiarism of any form is not tolerated. Plagiarism means using the exact words, opinions, or information from another person without giving the appropriate credit. Any offense will result in a grade of F for the course and will be dealt with in accordance with university regulations.

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; <http://ods.gmu.edu>) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

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/>*

Privacy and E-mail Use

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

Add/Drop Deadlines

- Last day to add: September 3
- Last day to drop (no tuition penalty): September 9
- Final drop deadline (50% tuition liability): September 17
- Self-Withdrawal period (100% tuition liability, W on transcript): September 18 – September 30
- Selective-Withdrawal period (100% tuition liability, W on transcript): October 1– October 29

Course Schedule

Fall 2019

Week	Date	Topic	Readings
1	Aug 26	Introduction/ What is Neuroscience?	Chapter 1:1.1
	Aug 28	Cells of the Nervous System	Chapter 2: 2.1-2.4
2	Sept 2	No Class: Labor Day	
	Sept 4	Building a Brain: Development	Chapter 1: 1.2-1.7
3	Sept 9	Organization of the Nervous System	Chapter 2: 2.5-2.8
	Sept 11	The Senses	Chapter 2: 2.5-2.8
4	Sept 16	Exam 1	
	Sept 18	<i>Scientific Principles I: Evidence-Based Science Part 1</i>	Reading I Posted in Blackboard
5	Sept 23	<i>Scientific Principles II: Evidence-Based Science Part 2</i>	Reading II Posted in Blackboard
	Sept 25	Action Potentials	Chapter 3: 3.1-3.4
6	Sept 30	Movement	Chapter 3: 3.5-3.7 Scientific Principals I and II HW Due
	Oct 2	Neurotransmitters	Chapter 4
7	Oct 7	Stress and Mental Health	Chapter 4
	Oct 9	Exam 2	
8	Oct 15 Class Meets Tuesday!!	<i>Scientific Principals III: Sources</i>	Reading III Posted in Blackboard
	Oct 16	<i>Scientific Principals IV: Science and Society</i>	Reading IV Posted in Blackboard Read Science and Society Project Assignment Sheet in Blackboard
9	Oct 21	Learning and Memory	Chapter 5
	Oct 23	Learning and Memory	Chapter 5 Scientific Principals III and IV HW Due
10	Oct 28	Blood: Feeding the Nervous System	Chapter 6
	Oct 30	Emotion, Mood and Behavior	Chapter 7
11	Nov 4	Emotion, Mood and Behavior	Chapter 7
	Nov 6	Exam 3	
12	Nov 11	<i>Scientific Principals V: Methods and Emerging Technologies</i>	Reading V Posted in Blackboard
	Nov 13	<i>Scientific Principals VI: Neuroethics</i>	Reading VI Posted in Blackboard
13	Nov 18	Sleep and Circadian Rhythms	Chapter 8
	Nov 20	Injury and Regeneration (or not)	Scientific Principals V and VI HW Due
14	Nov 25	Neurodegenerative Diseases	
	Nov 27	No Class: Thanksgiving Break	

15	Dec 2	Student Choice Lecture	
	Dec 4	Final Exam Review	Neuroscience & Society Project Due
Final Exam:		Wednesday, December 11, 1:30pm - 4:15pm	

NOTE: This schedule is subject to change at any time. You are responsible for all announcements and syllabus modifications made in class each week whether you are present or not.

Scientific Principals Unit Descriptions:

All scientific principals units will include in-class activities or guided discussions and be followed by a homework assignment.

Scientific Principles I and II: Evidence-Based Science: This unit will focus on how evidence is used to draw conclusions in science, on variable scales. In-class activities will focus on discriminating the conclusions that can and cannot be drawn from a given set of data.

Scientific Principals III: Sources: This unit will focus on finding and consuming scientific information. During in-class activities students will use databases to find primary and secondary sources of information to answer a given question. As a class we will discuss ways to evaluate scientific information in the news and on social media. We will also cover how to properly cite and reference sources.

Scientific Principals IV: Science and Society: This unit will be used to survey several societal challenges related to neuroscience and to introduce the Science and Society Project (described in the Assignments section above)

Scientific Principals V: Methods and Emerging Technologies: This unit will survey commonly used methods in neuroscience that students are likely to encounter when reading literature. We will also discuss new and emerging technological advances.

Scientific Principals VI: Neuroethics: This unit will delve into several current ethical debates in neuroscience. We will debate ethical dilemmas in a structured format in class.