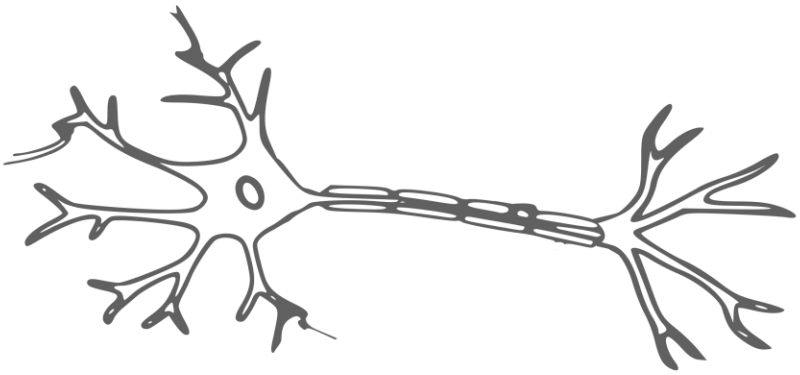
Neurobiology
BIOL 390, Spring 2019



Instructor: Dr. Jennifer Bray
Office: 311 CBB
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E-Mail: jbray@uwsp.edu
Office Hours: Tuesday and Thursday 11:00 to 12:00 or email to make an appointment ☺

Class Meetings: CBB 269, Tuesday, Thursday, and Friday 10:00 – 10:50 a.m.

Recommended Text: Purves et al., (2017) Neuroscience, 6th Edition. Sinauer Associates, Inc. Available for rent in the bookstore.

Additional course information: The course website on Desire to Learn (D2L) will be used for posting course materials. Course documents will be posted in .pdf format. Also please check the D2L site often for announcements.

Course Description: Neurobiology is a 3-credit lecture course designed to introduce the study of the nervous system. The course will consider the structure and function of the nervous system from the molecular and cellular levels to the systems level. The course will also cover basic signaling mechanisms, sensory systems, and motor systems. The overall goal of the course is to provide students with an appreciation of the current state of knowledge in neurobiology and an adequate background for further study in the field.

Course Learning Objectives: Upon completion of this course, the student will be able to describe the current understanding of:

1. How the membrane potential is used for signaling in the nervous system, including the mechanisms involved in generating and maintaining the resting membrane potential, action potentials, and synaptic potentials.
2. The overall structure and organization of the nervous system.
3. The mechanisms involved in somatic sensation from the level of sensory transduction to the organization of the sensory pathways within the brain.
4. The roles and contributions of the various components of the somatic motor system including proprioceptors, muscles and motorneurons, spinal cord, brainstem, cerebellum, basal ganglia, and motor areas of the cerebral hemispheres.

General Course Outline:

Neural Signaling

Chapter 1 - Studying the Nervous System
Chapter 2 - Electrical Signals of Nerve Cells
Chapter 3 - Voltage-Dependent Membrane Permeability
Chapter 4 - Ion Channels and Transporters
Chapter 5 - Synaptic Transmission
Chapter 6 - Neurotransmitters and Their Receptors
Chapter 7 - Molecular Signaling within Neurons
Chapter 8 - Synaptic Plasticity

Sensation and Sensory Processing

Appendix - Neuroanatomy
Chapter 9 - The Somatic Sensory System
Chapter 10 - Pain
Chapter 11 - The Eye
Chapter 12 - Central Visual Pathways
Chapter 24 – Modification of Neural Circuits as a Result of Experience

Exams and other Graded Work: Each exam will consist of matching, fill in the blank, short answer, and/or essay questions. The specifics of each exam's content and format will be discussed as they approach. Exams must be taken at the assigned time and alterations to this schedule will only be made for personal injury or family emergencies (e.g. death in the family, serious accident, or hospitalization). In such cases, documentation of some kind must be provided, and you are expected to reschedule the exam as soon as possible. If you have a prearranged excused absence, such as a UWSP sponsored sporting event, a graduate school interview, or a research conference, etc., I must be informed well before class when possible and receive documentation of your absence. Absences relating to a student's religious beliefs will be accommodated providing the student notifies the instructor regarding the specific dates she/he will be absent at the beginning of the semester.

Exams are not comprehensive. That said, course material will build over the semester and it will be important for you to remember and apply basic information learned early on to material covered later in the course.

There will also be a number of homework assignments and quizzes during the semester that will count towards your final grade. If you have an unexcused absence, you will not be allowed to make up quizzes or assignments. Each exam will be worth 20% of your grade and the remaining 20% will consist of quizzes and assignments.

Readings and Discussion questions: I may assign readings from the primary literature or other sources throughout the semester. A portion of the lecture time will be dedicated to class discussion of assigned readings. You are to provide five discussion questions for *each* assigned reading. Questions must be informed and indicate to me that you read, comprehended, and contemplated the reading. Bring two copies of your questions to class; one will be handed in to me, and the other you will use to aid in your discussion of the readings. Questions must be handed in at the beginning of class to receive credit. Material from these readings may appear on exams.

Grade Scale (out of 100% of Total):

A ≥ 93-100	C = 73-76
A- = 90-92	C- = 70-72
B+ = 87-89	D+ = 67-69
B = 83-86	D = 60-66
B- = 80-82	F < 60
C+ = 77-79	

Academic Integrity: Academic integrity is central to the mission of higher education in general and UWSP in particular. Academic dishonesty (cheating, plagiarism, etc.) is taken very seriously. Don't do it! The minimum penalty for a violation of academic integrity is a failure (zero) for the assignment. For more information, see the UWSP "Student Academic Standards and Disciplinary Procedures" section of the *Rights and Responsibilities* document, Chapter 14, which can be accessed here: https://www.uwsp.edu/dos/Documents/2015_Aug_Community%20Rights%20and%20Responsibilities%20Web.pdf

Students with Disabilities: The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. Students with disabilities should contact the Office of Disability Services during the first two weeks of the semester in they wish to request specific accommodations. For more information about UWSP's policies, check here: https://www.uwsp.edu/hr/Directors/Americans%20with%20Disabilities%20Act%20Policy.pdf

If you have a disability and require classroom and/or exam accommodations, please register with the Disability and Assistive Technology Center and contact me at the beginning of the course. I am happy to help in any way that I can!