

Neurobiology

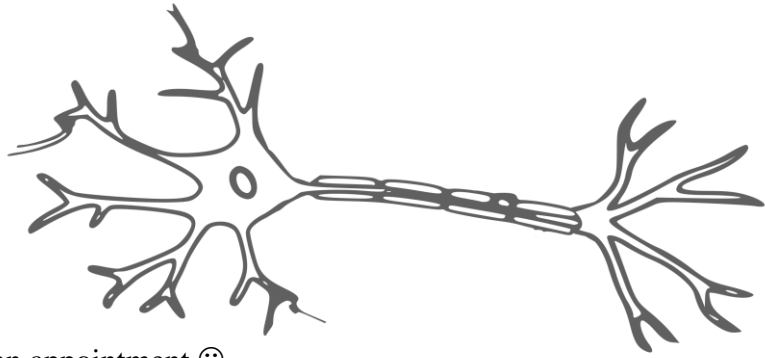
BIOL 390, Spring 2022

Instructor: Dr. Jennifer Bray

Office: 311 CBB

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Office Hours: email to make an appointment ☺



Class Meetings: CBB 269, Tuesday, Thursday, and Friday 9:00 – 9:50 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 Canvas will be used for posting course materials. Course documents will be posted in .pdf format. Also please check your email and the Canvas 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 motoneurons, 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

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

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	

Face Coverings: At all UWSP campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the [Disability and Assistive Technology Center](#) to discuss accommodations in classes. **Please note that unless everyone is wearing a face covering, in-person classes cannot take place.** This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

Other Guidance:

- Please monitor your own health each day using [this screening tool](#). If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).
 - As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.
- Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face. Please maintain these same healthy practices outside the classroom.

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 by clicking [here](#).

Students with Disabilities: 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!

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. For more information about UWSP's policies, check here:

<https://www.uwsp.edu/datc/Pages/default.aspx>