

Biology 394: Neurobiology Techniques
Fall, 2018

Course Description: This course will provide students with a survey of physiological and anatomical techniques that are useful for the study of nervous systems.

Students completing this course will be able to demonstrate:

- functional understanding of the electronic instrumentation used to record neuronal activity.
- competence at recording electrophysiological signals from a variety of neurons and nervous systems.
- understanding of the theory underlying the anatomical techniques for neuronal tract-tracing, and competence at interpreting the results of tract-tracing experiments.
- basic understanding of vertebrate brain anatomy.

Instructor: Duane R. McPherson, Ph.D.
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Office Hours: Monday, 1:00 – 2:00; Wednesday, 2:00 -3:00; Thursday, 11:00 – 12:00

Class Meetings: Thursday, 1:00 – 4:45, in ISC 203

Course Text: Course materials will be distributed on Canvas

Schedule of Activities (Tentative)

<u>Class Date</u>	<u>Activity</u>
Aug 30	Introduction to electrophysiology: using the PowerLab interface along with LabChart software. Theory and practice of extracellular recording: electromyograms.
Sept 6	Extracellular recordings from earthworm nerve cord.
Sept 13	Intracellular recordings from earthworm body muscle.
Sept 20	Continue intracellular recordings from earthworm muscle. Fix muscle samples.
Sept 27	Section and stain earthworm muscle samples.
Oct 4	Observe and record <i>Lymnaea</i> feeding behavior. Practice <i>Lymnaea</i> brain dissection.
Oct 11	Extracellular recording of feeding motor program in <i>Lymnaea</i> . Set up nerve backfills.
Oct 18	Continue extracellular recording in <i>Lymnaea</i> . Analyze nerve backfills.
Oct 25	Intracellular recording from <i>Lymnaea</i> neurons.
Nov 1	Continue intracellular recordings in <i>Lymnaea</i> .

Nov	8	Begin sheep brain dissection. Analyze <i>Lymnaea</i> recordings.
Nov	1 5	Continue sheep brain dissection. Begin sectioning brain samples.
Nov	2 2	<i>Thanksgiving Holiday – No Class!</i>
Nov	2 9	Staining and analysis of sheep brain sections.
Dec	6	Sheep Brain Quiz, 9:00 – 10:00 a.m.

Evaluation:

Lab notebooks: 15%

Class participation: 10%

Lab Reports: 60%

Sheep Brain Quiz: 15%

Accommodations: SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will be made for medical conditions related to pregnancy or parenting. Students should contact Tabitha Buggie-Hunt in the Office of Disability Services (tbuggieh@geneseo.edu or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester.