NSC/BCS 203W: Laboratory in Neurobiology, Spring 2026

Lab at Meliora 111
Computer Lab at Meliora 178

Instructors:

Jude Mitchell	jude.francis.mitchell@gmail.com
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Attilio Ceretti	attilio_ceretti@urmc.rochester.edu

TAs:

Andrea Campbell	Andrea_Campbell@urmc.rochester.edu
Saeid Sefidi	ssangsef@ur.rochester.edu
Mark Osabutey	Mark_Osabutey@urmc.rochester.edu

TA assignments per sections:

Tues	1:00-4:30 pm	Andrea Campbell
Wed	1:00-4:30 pm	Saeid Sefidi
Thurs	1:00-4:30 pm	Mark Osabutey

Objective and Design

This course introduces various methodologies utilized in neurobiological research and demonstrates principles and concepts covered in NSC 201 (BCS 240). The first part of the course (before spring break) entails structured laboratory experiments focused on neuroanatomical and neurophysiological approaches to studying neural organization and function. During this portion of the course, you will learn to prepare laboratory reports in the style of a scientific research paper.

The course concludes with a research project that extends over a period of five weeks. The neurogenetics final project entails behavioral tests and opto-genetic manipulations to explore the role of the neurons that control feeding in the fruit fly (*Drosophila melanogaster)*. Students will learn methods to cross fly lines to label genetically targeted cells, perform behavioral assessments, and tissue processing for quantitative anatomical analysis. This experiment culminates with the production of a final research paper.

Grading:

Quizzes will be given at the beginning of the class period and are designed to evaluate whether students have read the lab manual and understand the purpose of the experiments and procedures they will be conducting. The total grade will be distributed as follows:

Quizzes:	In class quizzes and sentence scramble	10%
Neuroanatomy:	Results Lab Report	15%
	Results Revised Report	15%
Neurophysiology:	Methods	15%
	Methods/Results Report	15%
Neurogenetics:	Final Lab Report	30%

All assignments must be submitted via blackboard on the date specified as MS Word documents (not PDF!). If you experience extenuating circumstances that will result in a late submission, talk to one of the instructors beforehand; a penalty of **5 pts/day** will be assessed and **beyond 4 days late you are required to contact your instructor** to determine if you can still get credit and how you will turn it in.

Most scientific information is communicated in written form. Thus, a significant emphasis in this course is placed on scientific writing. This manual contains detailed information on appropriate format for scientific research papers. In addition, all students should read as a reference "The Science of Scientific Writing" by George D. Gopen and Judith A. Swan (American Scientist, 1990, 78:550-558).

ChatGPT or other AI writing assistance is NOT ALLOWED for any assignment! Penalties will be severe if its use is detected in writing assignments.

The grading of your papers reflects assessment of scientific understanding, clarity of presentation, logical argumentation, conformation to accepted structure in scientific writing, as well as general writing skill. In a written document, poor writing often obscures the scientific points being made, thus we cannot cleanly separate conceptual knowledge from writing proficiency. We must emphasize writing: communication skills affect knowledge transfer!

All students must submit a revision for the anatomy and electrophysiology assignments (they will include both a revision and an augmentation of the results section).

Each lab section will begin with a quiz at 1pm sharp (first 5 minutes of class) to verify you have completed readings before coming to class (10% of total grade). You will not be allowed to take the quiz if you arrive late. If you will miss or be late contact your instructor in advance.

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SCHEDULE - Spring 2026

Instructors: Jude Mitchell, Adam Snyder, Attilio Ceretti

Jan 20, 21, 22	(JM-tue&wed&thurs) Cellular Neuroanatomy
Jan 27, 28, 29	(AS-tue&wed&thurs) Statistical Analysis of Data (1- and 2-way ANOVA)
Feb 3, 4, 5	(JM-tue&wed&thurs) Scientific Writing (writing Results)
	****Writing: Sentence Scramble due by noon before the start of class**
Feb 10, 11, 12	(AS-tue&wed&thurs) Bioethics & Overview of
	Stereotaxic Surgery & Perfusion Methods in Rodents
	****Anatomy Analysis due the day before lab by 5PM – Feb 10, 11, 12**
Feb 17, 18, 19	(JM-tue&wed&thurs) Insect Nerve Recording: Neuron rate coding
	(JM) Anatomy assignment returned with comments by start of class
Feb 24, 25, 26	(JM-tue&wed&thurs) Effects of neuromodulators on transmission
	****Anatomy Revision due the day before lab by 5pm**
Mar 3, 4, 5	(JM-tues&wed&thurs) Revised cricket experiment
	****Methods for Cricket Exp. due 5PM the day before lab**
Mar 10,11,12	**Spring Break (no classes)**
	(Attilio Ceretti – Tuesday, JM – wed, AS – thurs)
Mar 17, 18, 19	Overview of neurogenetics project
	(optogenetic activation of appetitive feeding)
	+ Introduction to fly anesthesia and sexing flies to make crosses
	(TAs) Cricket methods returned with comments by start of class
Mar 24, 25, 26	Measuring feeding behavior in flies – extension of proboscis:
	- Testing feeding for sweet vs bitter solution in controls
	****Neurophys Methods/Results due the day before lab by 5PM**
Mar 31, Apr 1, 2	Measuring feeding behavior in crossed flies under optogenetics,
	- Testing feeding sweet vs bitter, with and w/out light stim
Apr 7, 8, 9	Brain dissection overview, analysis of prepared fly brain slides
	- Comparison of controls vs genetic modified, GFP expression
Apr 14, 15, 16	Final Class Meeting: Analysis of data, writing intro & discussion
Apr 21, 22, 23	TA review: Question and answer session on final project.
Apr 28, 29, 30	No Class – writing final project paper
May 1:	****Final Research Project Report Due 5PM**