

This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 459 – Neurobiology of Sensory and Motor Systems

General Course Syllabus (as of May 2019)

About the Course:

Course Description: Analysis of the mechanisms of sensory processing and motor orchestration using vertebrate and invertebrate model systems. Neural circuit structure, specialization, information coding, integration, and behaviour.

Course Format: Lecture, Student Presentations

Credits: 3

Prerequisites: BIOL 455

Course Learning Objectives:

By the end of this course, students will be able to:

- Explain the conceptual advances contributed by research on several model systems to sensory-motor neuroscience.
- Critically evaluate different types of experimental data and synthesize such data into a mechanistic understanding of animal behaviour.
- Compare the modulation of circuit function in response to different environments and internal states.
- Integrate biological mechanisms at different levels of nervous system organization (molecules, neurons, neural circuits, systems, behaviour).
- Develop a framework for teaching how the nervous system detects and interprets, and then makes changes to the physical world.
- Communicate in the language of systems neurobiology as a practitioner in the field.

Textbooks and Additional Resources:

No textbook; see Canvas for course details.

Grading Scheme:

Assessment	Weight
Midterm exam	35%
Introductions to paper discussions	10%
Participation	15%
Presentation of grant proposal	20%
Written grant proposal	20%

Schedule of Topics:

Activity	Topic
Lecture 1	Course introduction
Lecture 2	How to give a talk
Lecture 3	Introduction to fly olfaction
Paper discussion 1	Fly olfaction
Paper discussion 2	Fly olfaction
Lecture 4	Introduction to birdsong
Paper discussion 3	Birdsong
Paper discussion 4	Birdsong
Lecture 5	Introduction to barrel cortex
Paper discussion 5	Barrel cortex
Paper discussion 6	Barrel cortex
Lecture 6	Introduction to fly vision
Paper discussion 7	Fly vision
Paper discussion 8	Fly vision
Lecture 7	Introduction to spatial navigation 1
Lecture 8	Introduction to spatial navigation 2
Paper discussion 9	Spatial navigation
Paper discussion 10	Spatial navigation
Midterm exam	
Workshop	Grant writing
Student presentations (~4 classes)	
Assignment	Written grant proposal

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).