Physiology and Neurobiology (PNB)

pnb.uconn.edu

5101. Anatomy and Physiology for Intraoperative Neuromonitoring

Four credits. Prerequisite: Instructor consent. Recommended preparation: course background in biology.

Anatomy and physiology of the nervous and musculoskeletal systems.

5102. Fundamentals of Intraoperative Neuromonitoring

Three credits. Prerequisite: Instructor consent.

Overview of intraoperative neuromonitoring. Basics underlying recording of signals and discussion of main neuromonitoring modalities, common surgeries employing neuromonitoring, operating room protocols and procedures.

5103. Applied Intraoperative Neuromonitoring

Two credits. Prerequisite: Instructor consent.

Experience working with the intraoperative neuromonitoring recording machines. Practice writing protocols for different modalities, and use of simulator programs to observe examples of signal acquisition.

5104. Clinical Practicum in Intraoperative Neuromonitoring

Three credits. Prerequisite: PNB 5101, 5102, and 5103; with an average GPA of 3.0 or higher in these courses, and instructor consent. May be repeated for credit.

Direct student involvement in intraoperative neuromonitoring of various surgical procedures, observing live signals obtained in a clinical setting, interaction with patients, surgeons and operating room staff, and review of operating room protocols and procedures.

5105. Seminar in Intraoperative Neuromonitoring

Two credits. Prerequisite: Instructor consent. May be repeated to a maximum of four credits.

Presentations of clinical and nonclinical topics affecting the daily job of an intraoperative neuromonitoring clinician's. Topics may include the sterile field; infection control; needle, electrical, radiation and fire safety; patient privacy laws (HIPAA); professional conduct and communication; and diversity in the workplace.

5106. Advanced Modalities in Intraoperative Neuromonitoring

Four credits. Prerequisite: Instructor consent.

Comprehensive didactic and laboratory training on advanced neuromonitoring modalities (tests) such as Phase Reversal, Motor Mapping, D-Wave, Nerve Action Potential and H-Reflex.

5270. Molecular Endocrinology

Three credits.

Molecular mechanism(s) of hormone action in vertebrates and invertebrates. Molecular and genetic characterization of hormones, receptors, and signal transduction, and hormone actions at the molecular, cellular, and organismal levels. Includes student presentations on selected papers.

5302. Fundamentals of Physiology

Three credits.

Introduction to integrative biology. Associations of molecules, cells and tissues and their integrated functions across all organizational levels. Application of language and basic concepts of physiology to the development of problem-solving skills.

5347. Electron Microscopy

Variable (1-3) credits. Prerequisite: Instructor consent. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Lectures and laboratory exercises on the principles and practice of biological electron microscopy.

5351. Projects in Electron Microscopy

Variable (1-3) credits. Prerequisite: Instructor consent. May be repeated for a total of 12 credits.

Electron microscopy as a research method in biological sciences.

5390. Membrane Transport in Health and Disease

Three credits.

Fundamental mechanisms by which water and small molecules are transported across biological membranes. Biophysical and biochemical analysis of transport by diffusion, osmosis, channels, carriers and pumps in health and disease.

5395. Independent Study

One credit. May be repeated for a total of 12 credits.

A reading course for those wishing to pursue special work in biology.

5396. Investigation of Special Topics

Variable (1-3) credits. May be repeated for a total of 24 credits.

Advanced study in a field within Physiology and Neurobiology.

5397. Research

Variable (1-6) credits. May be repeated for credit.

Conferences and laboratory work covering selected fields of Physiology and Neurobiology.

5700. Sensory Physiology

Three credits.

Cellular and molecular mechanisms supporting the detection of sensory stimuli in vertebrates, invertebrates and other organisms. Detection of chemicals, touch, temperature, pain, sound, light, heat, magnetic fields, and electricity

6400. Seminar in Neurobiology

One credit. May be repeated for a total of 12 credits. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

An in-depth study of selected topics in the molecular, cellular, and central aspects of neurobiology.

6402. Seminar in Comparative Physiology

One credit. May be repeated for a total of 12 credits.

6403. Seminar in Endocrinology

One credit. May be repeated for a total of 12 credits. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

6405. Seminar in Research and Journal Presentations in Physiology and Neurobiology

One credit. May be repeated for a total of 12 credits. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Provides the opportunity for graduate students to present journal articles and their laboratory research in physiology and neurobiology to the department.

6417. Developmental Neurobiology

Three credits.

Molecular mechanisms of neurodevelopment. Neural induction, cell fate determination, neurogenesis, axon targeting, neuronal migration, synapse formation and activity-dependent synaptic remodeling.

6418. Integrative Neurobiology

Three credits.

Physiology of the central nervous system: information processing and central mechanisms in vertebrates and invertebrates; physiological aspects of behavior.

6420. Physiological Proteomics

Three credits.

Current experimental and computational techniques available to study the proteome and its role in cellular and organismal physiology

6423. Human Reproduction

Three credits.

The physiology of human reproduction.

6426. Molecular and Cellular Neurobiology

Three credits. Prerequisite: Open only to Physiology and Neurobiology graduate students; open to undergraduates in their senior year who have passed PNB 3251, 3275, and one of MCB 2000, 2210, or 3010; open to non-PNB graduate students by instructor consent.

Molecular and cellular aspects of modern neurobiology including the analysis of neuronal proteins and their post-translational modifications, the dynamics of cellular substructures, and various signaling mechanisms innerve cells including synaptic transmission. Molecular and cellular biology of selected neurological disorders.