NEUROSCIENCE (NEURODPT)

NEURODPT 533 — MOLECULAR PHYSIOLOGY
2 credits.

This course will introduce functional aspects of mammalian organ systems from a molecular perspective. Human diseases will receive a special emphasis, and diseases will be used to illustrate the connection between molecules and biological function. Enroll Info: CHEM 103 104 or 109 or 115 116; PHYSICS 201 202 or 207 208; ZOOLOGY/BIOLOGY/BOTANY 151 152 or Biocore 303 304; MATH 221 222 or 275 276. Recommended but not required: Biocore 323, biochem (e.g. BIOCHEM 507 508), cell biology (e.g. ZOOLOGY 570)

Requisites: Graduate/professional standing or (CHEM 104, 109, or 116 and PHYSICS 202 or 208 and BOTANY/BIOLOGY/ZOOLOGY 151 and 152 or BIOCORE 383)

Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2018

NEURODPT/NTP 610 — CELLULAR AND MOLECULAR NEUROSCIENCE
4 credits.

Study of original papers leading to an understanding of the molecular basis of electrical activity in neurons. Topics include voltage-sensitive currents, molecular biology of neuronal receptors, synaptic transmission and sensory transduction. Lectures supplemented with experimental demonstrations and discussion sessions. Enroll Info: Zoo 523 or equiv

Requisites: Graduate/professional standing or (BOTANY/BIOLOGY/ZOOLOGY 151 or BIOLOGY/ZOOLOGY 101 or BIOCORE 485) and (CHEM 103, 104, or 109) and (PHYSICS 202, 208, or 248)

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

NEURODPT/NTP/PSYCH 611 — SYSTEMS NEUROSCIENCE
4 credits.

Introduction to the anatomy and physiology of the mammalian nervous system. Lectures will cover the neuroanatomy of the major subdivisions of the human brain, the major sensory and motor systems, and higher order functions. Lab/discussion sections will emphasize readings from the primary literature and hands-on dissections. Enroll Info: None

Requisites: NEURODEPT 610 or graduate/professional standing
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

NEURODPT/NTP/ZOOLOGY 616 — LAB COURSE IN NEUROBIOLOGY AND BEHAVIOR
4 credits.

Students will do three independent experimental modules exploring neurophysiology and behavior, each taking 4-5 weeks. Students will work in groups of 2 or 3 and will learn techniques and then develop their own short investigations into each of three separate areas of neurobiology. There will be continual interaction between students and faculty. Enroll Info: PSYCH/ZOOLOGY 523 and PHYSIO /ZOOLOGY 524 or PHMCOL-M/PHYSIOL 610 and PHMCOL-M/PSYCH/NEURODPT/NTP 611

Requisites: None
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

NEURODPT/NTP 629 — MOLECULAR AND CELLULAR MECHANISMS OF MEMORY
3 credits.

Focuses on the cell signaling and the resulting structural changes that occur at neuronal synapses during memory formation. The aim is to understand how the synaptic changes underlying memory occur. Enroll Info: None

Requisites: Graduate/professional standing or ANAT&PHY 335, 435, PHYSIOL 335, 435 or ZOOLOGY/PSYCH 523
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

NEURODPT/NTP 630 — NEURONAL MECHANISMS FOR SENSATION AND MEMORY IN CEREBRAL CORTEX
3 credits.

Current literature will be considered in lectures and discussions that provides insight into how the cerebral cortex processes sensory information to generate and store cogent representations of the external world. The course includes laboratory exercises and demonstrations. Enroll Info: None

Requisites: PHMCOL-M/PSYCH/NEURODPT/NTP 611, MED SC-M 731, COMP BIO 505, ZOOLOGY/PSYCH 523, PSYCH 454, or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017
Behavior results from a complex interplay among hormones, the brain, and environmental factors. Behaviors and their underlying neural substrates have evolved in response to specific environmental conditions, resulting in vast species diversity in behavioral and neuroendocrine solutions to environmental problems. This seminar is designed to explore the primary literature on the neuroendocrine underpinnings of behavior spanning from feeding to sex differences in complex social behaviors. A range of taxonomic groups will be discussed, including (but not limited to) mammals, birds, and fish. A background in neuroscience and/or endocrinology is strongly recommended. Enroll Info: None

**NEURODPT/PSYCH/ZOOLOGY 675 — SELECTED TOPICS IN PHYSIOLOGY**

1-3 credits.

Each topic taught once every two years: advanced cardiovascular physiology, advanced respiratory physiology, advanced endocrinology, membrane transport physiology and neurobiology. Enroll Info: None

**NEURODPT 699 — INDEPENDENT WORK**

1-4 credits.

Independent work. Enroll Info: None

**NEURODPT 700 — CYTOSKELETAL DYNAMICS**

2 credits.

Course content is topical and current. The course covers such issues as microtubule dynamics, microtubule-associated proteins, microtubule-organizing centers, actin filaments, actin regulatory proteins, intermediate filaments, cell motility, mitosis, process outgrowth, and cell differentiation. Enroll Info: None

**NEURODPT 747 — SENSORY AND MOTOR SYSTEMS**

2 credits.

Neural pathways that underlie normal sensory and motor function, and how these functions are disrupted when the pathways are damaged. Build upon the introduction to the nervous system from previous coursework and will specifically focus on a more complete description of the functional, basic science details of the nervous system’s sensory and motor components. Combines basic and clinical neuroscience and clinical application of basic science principles. Enroll Info: None

**NEURODPT/NTP/ZOOLOGY 765 — DEVELOPMENTAL NEUROSCIENCE**

3 credits.

Analysis of neural development with emphasis on experimental approaches. Combination of lectures and discussions of primary literature. Topics include neural induction, patterning, mechanisms of axon guidance, neural crest cell migration and differentiation, cortical development, and synapse formation and elimination. Enroll Info: None

**NEURODPT 990 — RESEARCH AND THESIS**

1-9 credits.

Enroll Info: None

**NEURODPT 995 — RESEARCH AND THESIS**

1-9 credits.

Enroll Info: None

**NEURODPT 997 — RESEARCH AND THESIS**

1-9 credits.

Enroll Info: None