

Dear Faculty Member,

Thank you for your interest in becoming a member of the University of Utah's Interdepartmental Program in Neuroscience. The following is our policy statement on faculty membership.

The essential criteria for program membership are a willingness and ability to train graduate students and to participate in the teaching and administrative functions of the program. The research interests of the faculty member should be compatible with current program members so that they can participate productively in teaching activities. It is expected that all program members will actively participate in program functions, including teaching and administration. The specific requirements for admission are:

1. A current C.V.
2. A letter from the department chairman requesting membership in the program and confirming that the department will provide graduate student funding in the event that the mentor cannot provide support.
3. A letter from the applicant requesting membership. The applicant should indicate willingness to train graduate students and to participate in both the teaching and the administrative functions of the Program. The applicant should also indicate how their research fits programmatic themes and the types of courses that could be taught or created by the applicant.
4. Complete and return the attached form.

All completed applications should be sent directly to the Academic Program Manager, Nicole Caldwell. They will be evaluated by the departmental representatives of the Program Directorate. If there are any questions regarding these requirements or your current membership status, please do not hesitate to contact me at 801-581-4820, campus mail: 390A BPRB or e-mail: nicole@neuro.utah.edu.

Sincerely,

Nicole Caldwell
Academic Program Manager
Interdepartmental Program of Neuroscience
University of Utah

*enclosures: Course Descriptions
Neuroscience Program Participation Form*

c. July 2022

University of Utah - Interdepartmental Program in Neuroscience
Course Descriptions

NEUSC:

6030 Current Issues in Neuroscience (1)

Conducted in a journal club format where each semester involves faculty-guided analysis and discussion of current and fundamental literature in a topical area using student presentations. Topics range from development, brain imaging, membrane biophysics, channels, sensory transduction, etc.

6040 Cellular and Molecular Neuroscience (4) Cross listed as PHYSL 6040

The bulk of this course will focus on the cellular mechanisms of signaling. The topics to be covered include basic neuronal/glia morphology and cell biology; neurostructural mapping and identification; basic neural development; cytoskeleton-structure and biochemistry; basic membrane biophysics; cable properties; ion channel biophysics and molecular biology; synaptic transmission; neurotransmitter gated ionotropic systems; and neurotransmitter gated metabotropic systems.

6050 Systems Neuroscience: Functioning of the Nervous System (4)

Understanding how the brain works is one of the deepest and most exciting challenges confronting modern science. This course will explore systems-level functioning of the nervous system, beginning with relatively concrete issues of sensory coding and motor control, and expanding into more abstract, but equally important, higher-order phenomena, such as language, cognitive and mood disorders, states of arousal, and experience-dependent modifications of neuronal operations.

6060 Neuroanatomy (3) Cross listed as ANAT 7710. (Discontinued Fall 2023)

Anatomy of the human nervous system. (Designed for graduate students)

6100 Visual Neuroscience I (3) Prerequisite: NEUSC 6040.

Advanced course addressing optics, photochemistry, biochemistry, biophysics, anatomy, neurochemistry, circuitry, and electrophysiology of visual processing at the level of the vertebrate retina.

6200 Didactic Lectures in Pain and Functional Disorders (1)

Lectures by experts in the field include topics from Philosophy to Neurosurgery, Yoga to neuroablation, holistic treatment to pharmacotherapy all focused on the mechanisms and treatment of Pain and related disorders (including Fibromyalgia, Chronic Fatigue Syndrome, neuropathic pain, chronic back pain, irritable bowel syndrome, interstitial cystitis, headache, and others). All lectures are scheduled by the Director of the Pain Research Center, Dr. Richard Chapman, and Dr. Shane Brogan, Director of the Chronic Pain Center.

6245 Cellular and Molecular Neurophysiology Laboratory (1) Cross listed as BIOL 6245.

Electrophysiology and video microscopy study of nerve, muscle, and synapse. Meets M-F 8AM-5PM for one week before the start of the fall semester.

(continues)

6250 Molecular Biology Laboratory (1)

An accelerated course designed to introduce graduate students to basic laboratory techniques used to study DNA, RNA, and proteins. Techniques covered include solution preparation, PCR, digestion of DNA with restriction enzymes, DNA cloning, bacterial transformation, plasmid minipreps, in vitro transcription, electrophoretic separation of DNA, RNA, and proteins, and computer analyses of DNA and protein sequences. Meets M-F 8AM-5PM for one week before the start of the fall semester.

6300 Computational Neuroscience (3) Cross listed as BIOEN 6005

This course focuses on use of computational models to explore classical and modern problems in neurophysiology, including the integrative properties of single neurons, representation of sensory stimuli in single neurons and neuronal populations, pattern representation and completion in neural networks, and mechanisms of learning and adaptive behavior. Students are expected to perform a substantial amount of programming in problem sets and course projects.

6500 Advances in Vision Research (3)

A landscape course surveying the major problems in vision research and ophthalmology, integrating basic principles of visual pathways, significant unsolved problems in the field, clinical correlations, and profiles of key research projects.

6900 Neuroscience Rotations (1)

Neuroscience rotations are the prime mechanisms by which students become exposed to working laboratory science and attempt to match up with prospective mentors. All students complete three rotations in the first year as part of their formal training and to find prospective mentors.

7750 Developmental Neurobiology (3) Cross listed as ANAT 7750.

Cellular and molecular biology of nervous system development.

7790 Special Techniques in Microscopy (1) Cross listed as ANAT 7790.

Laboratory and lecture course of basic and advanced microscopic techniques. Phase contrast, fluorescence, polarization microscopy, photo and cinemicrography, transmission, scanning electron microscopy, and confocal user scanning microscopy.

7950 Professional Skills/Grant Writing (2) Cross listed as PHYSL 7950.

This course will provide a brief overview of professional skills for graduate students and postdoctoral fellows and will focus on how to write grant proposals in the biomedical sciences.

Interdepartmental Program in Neuroscience Participation Form

This Program is developed and managed by participating faculty. Each member is expected to participate in Program functions, including mentoring graduate students, teaching courses, sitting on committees, interviewing prospective students, and attending Program events.

Some of the Program's annual activities include the Snowbird Symposium, Neuroscience Student Symposium, monthly lecture series and recruiting weekends. Recruiting weekends are usually in February and March, and faculty participation is crucial to the continuing success and growth of the Program.

The committees of the Neuroscience Program are:

Admissions Committee reviews applications and selects the prospective students who will be invited for interviews and accepted to the Program.

Curriculum Committee meets throughout the year and coordinates the curriculum for the first-year students, i.e., journal clubs, electives, and core courses.

First-Year Student Advisor regularly meets with first-year students as an advisor prior to the student choosing a laboratory mentor. Also meets with other students as needed.

Recruitment Chair is involved with helping the program become more visible through advertising and identifying conferences, colleges, universities to send literature.

Please indicate which are you are applying for:

Participating Faculty: fully funded research program: _____

Associate Faculty: able to teach and serve on committees but not train students: _____

Please circle which committees you are interested in joining.

Admissions Committee

Curriculum Committee

Recruitment Chair

Student Advising Committee

Please list courses you are interested in co-teaching (see Course descriptions page)

Note: In addition to participation in lecture courses, each Program member is expected to participate in a journal club/seminar course and present a lecture every three years.