NEUROSCIENCE (PHD)

Visit program website. (http://neurograd.ucsf.edu)

Degree Offered: PhD
Program Leadership:
Samuel Pleasure, MD, PhD, Program Director
Admissions Inquiries:
Neuroscience Graduate Program, neurosciadmin@listsrv.ucsf.edu

Program Description

The Neuroscience PhD program prepares students for independent research and teaching in neuroscience. It seeks to train students who will be expert in one particular approach to neuroscientific research, but who will also have a strong general background in other areas of neuroscience and related disciplines. To achieve this objective, students take interdisciplinary core and advanced courses in neuroscience, as well as related courses sponsored by other graduate programs. In addition, students carry out research under the supervision of faculty members in the program.

The UCSF Neuroscience program faculty, who are among the world leaders in their respective areas of neuroscience, utilize innovative cellular, computational, electrophysiological, genetic, imaging, and molecular strategies to address outstanding problems in neuroscience. These approaches are employed in an integrative manner to engage in research in all areas of neuroscience, including behavior, biophysics, cell biology, development, neural systems, and disorders of the nervous system. The collaborative nature of the UCSF environment offers a unique opportunity for students to take advantage of the interdisciplinary nature of research at the frontier of modern neuroscience.

The UCSF Neuroscience Program is committed to a diverse and inclusive graduate student population, which enhances the educational experience, the workplace, and the nature of scientific research.

Faculty

The Neuroscience program currently has 100 faculty members from the following departments and areas: Anatomy, Biochemistry and Biophysics, Bioengineering, the Brain and Spinal Cord Injury Center, Cell and Tissue Biology, CMP, CVRI, the Diabetes Center, IND, Gladstone Institutes, Neurological Surgery, Neurology, the Neuroscience Imaging Center, Ophthalmology, Oral and Maxillofacial Surgery, Otolaryngology, Pathology, Pediatrics-Medical Genetics, Pediatrics-Neonatology, Pharmaceutical Chemistry, Physical Therapy, Physiology, and Psychiatry.

The Neuroscience program is a member of the Program in Biological Sciences (PIBS).

Sub-Disciplines

- Addiction Research
- Behavioral Neuroscience
- Cell and Molecular Neuroscience
- Developmental Neuroscience
- Nervous System Disease
- Synaptic Physiology
- Systems Neuroscience
- Theoretical/Computational Neuroscience

The Neuroscience program is based primarily at Mission Bay but also has faculty at Parnassus. Visit the program website (https://neurograd.ucsf.edu/) for more information.

The Neuroscience program is offered by the UCSF Division of Graduate Education and Postdoctoral Affairs, administered by the UCSF School of Medicine, and delivered by faculty members in the UCSF schools of dentistry, medicine, and pharmacy.

Admission Requirements

- Undergraduate courses in biology, physics, inorganic and organic chemistry, and calculus.
- Prior research experience (undergraduate thesis projects, internships, technician positions, summer research programs, etc.)

Learning Outcomes

1. General knowledge and understanding of modern neuroscience.
2. Theoretical understanding of a broad range of modern neuroscientific techniques.
3. Ability to read, critically assess, and review contemporary scientific literature.
4. Ability to identify outstanding questions in the field, and to design experiments that are ethical and viable to advance the field.
5. Practical expertise in techniques relevant to a subfield of neuroscientific research.
6. Capacity to produce high-quality grant proposals and scientific papers.
7. Clear communication of scientific research to both scientific and non-scientific audiences.
8. Conceptualization of the importance of mentorship, the variety of needs that accompany students of different backgrounds, and demonstration of mentorship ability.

Additional Information

Program Core Faculty

- *Find a* program faculty list *(*https://neurograd.ucsf.edu/faculty*) on the program website.*

Career Outcomes

- *Find* career outcomes and other data on PhD programs *(*https://graduate.ucsf.edu/program-statistics#career*) on the Graduate Education and Postdoctoral Affairs website.*

Degree Requirements

In order to assess the successful completion of the goals set out for students of the Neuroscience program, the program requires:

1. An agreement of the student's thesis committee that the student has demonstrated sufficient aptitude toward the above goals, as well as
2. The production of a graduate thesis in the form of a dissertation that demonstrates:
    1. Minimum GPA of 3.0
    2. All core courses and required activities taken and passed
    3. Six quarters in residence including a minimum of three registered quarters after advancement to candidacy
    4. Pass qualifying examination
    5. Completion and submission of the dissertation

6. For additional details, please see graduate.ucsf.edu/phd-degree (https://graduate.ucsf.edu/phd-degree)

In addition to the dissertation, students are required to:

7. Hold a thesis seminar, in which a curated portion of the dissertation is presented to an audience consisting of both neuroscientists and non-neuroscientists.
8. Have published, or have begun the process of publishing, a first-author scientific paper in a reputable peer-reviewed journal (under exceptional circumstances the thesis committee may assess the adequacy for graduation based on meeting all the other requirements for graduation without a first-author paper).

Course	Title	Units
Year 1		
Fall Quarter		
NEUROSCI 200	Introduction to Neuroscience. Essential Concepts & Methods	2.5
NEUROSCI 201A	Basic Concepts in Cellular and Molecular Neuroscience	5
NEUROSCI 215 or NEUROSCI 250	Laboratory Rotation [2] or Research	1-12
GRAD 202	Racism in Science	3
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility [1]	0
	Units	**11.5-22.5**
Winter Quarter		
NEUROSCI 201B	Basic Concepts for Cellular and Developmental Neuroscience	4
NEUROSCI 215 or NEUROSCI 250	Laboratory Rotation [2] or Research	8-12
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility [1]	0
	Units	**12-16**
Spring Quarter		
NEUROSCI 201C	Introduction to Systems and Behavioral Neuroscience	4
NEUROSCI 215 or NEUROSCI 250	Laboratory Rotation [2] or Research	8-12
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility [1]	1.5
	Units	**13.5-17.5**
Year 2		
Fall Quarter		
NEUROSCI 219	Special Topics in Basic and Translational Neuroscience (Scientific Writing with Prof. Sohal)	3
NEUROSCI 219	Special Topics in Basic and Translational Neuroscience (Experimental Design with Prof. Nelson)	3
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**7-14**
Winter Quarter		
NEUROSCI 248	Analysis of Neural and Behavioral Data	3
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**4-11**
Spring Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Year 3		
Fall Quarter		
NEUROSCI 221	Current Topics in Neuroscience	1
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**2-9**
Winter Quarter		
NEUROSCI 221	Current Topics in Neuroscience	1
NEUROSCI 248	Analysis of Neural and Behavioral Data	3
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**5-12**
Spring Quarter		
NEUROSCI 221	Current Topics in Neuroscience	1
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**2-9**
Year 4		
Fall Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Winter Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Spring Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Year 5		
Fall Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Winter Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
Spring Quarter		
NEUROSCI 250	Research	1-8
Students must complete 2 approved electives before graduation. (https://catalog.ucsf.edu/programs/neuroscience/#elective)		
	Units	**1-8**
	Total Units	**64-167**

[1] GRAD 214 is taken across three quarters during the first year.
- Fall and Winter enrollment should equal 0 units
- Spring enrollment should equal 1.5 units

[2] Medical Science Training Program (MSTP) students who have joined a thesis lab, instead of NEUROSCI 215, should enroll in NEUROSCI 250.

Approved Electives

Program approval is required in advance of taking an approved elective to count towards advanced course requirement.

Code	Title	Units
BIOMED SCI 270	Special Topics in Biomedical Sciences	3
BIOPHYSICS 219	Special Topics in Biophysics	3
CHEMISTRY 219	Special Topics in Basic and Translational Chemical Biology	3
DEV STMCEL 270	Special Topics in Developmental & Stem Cell Biology	3
NEUROSCI 219	Special Topics in Basic and Translational Neuroscience	3
PHARMGENOM 219	Special Topics in Pharm Sci and Pharmacogenomics	3

Other elective courses may be approved by the program as appropriate.

Non-course Core Requirements

- Teaching assistantship
- Qualifying exam
- Dissertation