Ph.D. PROGRAM

1) Admissions Requirements

Consideration for admission requires a bachelor’s degree, three letters of recommendation, official transcripts from all colleges and universities attended beyond high school, GRE scores, TOEFL or IELTS score (if applicable) and the Office of Graduate Studies online application with fee by the stated admission deadline. A minimum GPA of 3.0 is required. Admissions decisions are made on a case-by-case basis. Meeting these criteria does not guarantee admission. The decision to recommend admission to the Dean of Graduate Studies will be made by the Admissions Committee on the basis of available space and the competitiveness of the applicant compared to the eligible pool.

There are no course prerequisite requirements for this program.

2) Dissertation Plan

This program follows dissertation plan B. There is a dissertation committee consisting of five members, including the chair, an optional final oral examination (made on an individual student basis by the dissertation committee), and an exit seminar.

3) Course Requirements (39 units)

The coursework requirements for the Ph.D. are completed within the first two years of the program. 36 units of work in the first year includes, in addition to a specific set of Neuroscience (NSC) 200-level seminar and lecture courses, a series of laboratory rotations, a series of journal club courses, and a series of NSC 298 Group Study courses. For the laboratory rotations, students enroll in NSC 200LB, a repeatable course each quarter. The journal clubs are 1-unit courses whose topics and course designations vary from quarter to quarter (e.g., NSC 283, 284, 289, 298). The required coursework in the second year consists of 3 journal club courses. A current list of journal club offerings can be obtained from the Graduate Program Coordinator.

a) Required Courses

Year 1 Courses

Fall Quarter (12 units)

- NSC 200LB – Laboratory Methods in Neurobiology (3 units)
- NSC 201 – Neuroanatomy (3 units)
- NSC 221 – Cellular Neuroscience (4 units)
- NSC 298 – Responsible Conduct of Research Ethical Lecture Series (1 unit)
- One NSC Journal Club of student’s choice (1 unit)
Winter Quarter (12 units)

- NSC 200LB – Laboratory Methods in Neurobiology (3 units)
- NSC/NPB 222 – Systems Neuroscience (5 units)
- NSC 224A – Molecular Neuroscience: (2 units)
- NSC 298 – Responsible Conduct of Research Ethical Lecture Series (1 unit)
- One NSC journal club course of student’s choice (1 unit)

Spring Quarter (12 units)

- NSC 200LB – Laboratory Methods in Neurobiology (3 units)
- NSC 223 – Cognitive Neuroscience (4 units)
- NSC 298 – Cognitive Neuroscience Graduate Supplemental Discussions (1 unit)
- NSC 224B – Molecular Neuroscience (2 units)
- NSC 298 – Responsible Conduct of Research Ethical Lecture Series (1 unit)
- One NSC journal club course of student’s choice (1 unit)

Year 2 Courses

Fall, Winter and Spring (3 units):

- One NSC journal club course of student’s choice each term (1 unit each for 3 units total)

b) Elective Courses (no minimum)

Neuroscience graduate students are encouraged to take elective courses after their first year of study and journal club courses subsequent to meeting the requirement stated above. These should be chosen in consultation with a member of the Graduate Advisory Committee or the student’s Research Mentor. There is no minimum requirement.

c) Summary

A total of 39 units of coursework is required. Students must enroll for at least 12 units each quarter, including research, academic and seminar units. Courses that fulfill program course requirements may not be taken S/U unless they are offered only on an S/U basis. Once course requirements are completed, students can take additional seminars or lecture courses as needed or desired, although they may also use research (299) and journal club courses to attain the required 12-unit per quarter minimum enrollment. Per UC regulations students cannot enroll in more than 12 units of graduate level (200) courses or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

4) Special Requirements

Students are required to serve as a teaching assistant (TA) for one quarter in a course in Neuroscience or a related area.
5) Committees

a) Admissions Committee
   Once the completed application, all supporting material, and the application fee have
   been received, the application is submitted to the Admissions Committee. The
   Admissions Committee, which is appointed by the Chair of the Graduate Group, in
   consultation with the Executive Committee, consists of five graduate group faculty, one
   of whom serves as chair, and one senior student representative. Based on a review of the
   entire application, a recommendation is made to accept or decline an applicant’s request
   for admission. That recommendation is forwarded to the Dean of Graduate Studies for
   final approval of admission. Notification of admissions decisions is be sent by Graduate
   Studies.

b) Graduate Advisory Committee
   The Graduate Advisory Committee consists of the program’s graduate advisers, who are
   faculty members from different broad areas of Neuroscience. They are nominated by the
   Executive Committee of the Graduate Group and appointed in compliance with the
   policies and procedures of Graduate Council and the Office of Graduate Studies. The
   number of faculty on the Graduate Advisory Committee is such as to create a student to
   adviser ratio of 15:1. One member is appointed as the Master Adviser. Students meet
   with the Master Adviser formally at least once per year to monitor progress. All
   members of the committee are available to meet with students to advise them regarding
   laboratory rotation and elective course selection and are eligible to chair the Qualifying
   Exam Committee.

c) Preliminary Examination Committee
   The Preliminary Exam Committee consists of a chair and five other faculty members
   from the Graduate Group nominated by the Chair of the Graduate Group and approved
   by the Educational Policy Committee. Members are selected in such a way as to
   represent different broad areas of Neuroscience.

d) Qualifying Examination Committee
   The Qualifying Exam Committee consists of five faculty members nominated by the
   student, in consultation with the Master Adviser and the Research Mentor, and
   appointed by the Office of Graduate Studies in conformance with Graduate Council
   policy. The members of the committee are to be experts in areas related to the student’s
   proposal. The chair of the committee must be a member of the Graduate Advisory
   Committee, the Chair of the Graduate Group, or the Chair of Admissions. There must be
   one member from outside of the Neuroscience Graduate Group. The Research Mentor
   may not serve on the committee.

e) Dissertation Committee
   The Dissertation Committee is a five-member committee nominated by the student, in
   consultation with the Research Mentor, approved by the Master Adviser, and appointed
   by Graduate Studies. The members of the committee should all be experts in areas
   related to the student’s dissertation work. The Research Mentor will serve on the
   committee, but will not be the chair. There must be one committee member from outside
   of the Neuroscience Graduate Group. The composition of the Dissertation Committee is
entered on the Advancement to Candidacy form.¹ The role of this committee is to advise the doctoral student on the research topic and methods and then to review the final completed dissertation for acceptance. The committee chair should determine the desires of the individual members regarding assistance with the research and dissertation review at the time the committee is constituted. Students are expected to meet with their Dissertation Committee at least once per year, or more often as deemed necessary by the student or the committee. Dissertation Committee members are expected to read and comment on a dissertation within four weeks of its submission. This time limit policy does not apply to summer periods for faculty holding nine-month appointments. The student, in consultation with the Research Mentor and the committee chair, is to coordinate a timeline for the submission of the dissertation to the committee. This timeline must allow all committee members enough time to fulfill their responsibilities within the four-week deadline.

6) Advising Structure and Mentoring

The Research Mentor is the faculty member who primarily supervises the student’s research and serves as a member of the Dissertation Committee. This person is generally the Principal Investigator of the laboratory in which this research is conducted. The Master Adviser,² who is appointed by Graduate Studies and serves as the Chair of Graduate Advisory Committee, is the primary resource for information on academic requirements, policies, and procedures. Other members of the Graduate Advisory Committee provide advice on course selection and other academic matters as needed. The Graduate Program Coordinator assists students with administrative details of the program.² The Mentoring Guidelines can be found on the program web site.³

7) Advancement to Candidacy

Before advancing to candidacy for the Ph.D. degree in Neuroscience, a student must have satisfied all the coursework requirements detailed in section 3 above, must have maintained a minimum GPA of 3.0, and must have passed both the Preliminary Exam and the Qualifying Exam discussed in section 8 below. Students in this program normally advance by the end of the 7th quarter. By Graduate Council policy, students must pass their Qualifying Exam no later than the end of the 9th quarter in order to remain eligible for academic appointments (GSR, TA, etc.). Once the Qualifying Exam has been passed, the student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee in order to be officially promoted to Ph.D. Candidacy.¹ Refer to the Graduate Council website for additional details regarding policies governing advancement to candidacy and the Qualifying Examination.⁴

8) Preliminary Examination, Qualifying Examination, and Dissertation Requirements

a) Preliminary Examination

The Preliminary Exam is administered after the first year coursework has been completed. It has both a written and an oral component.

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² [http://neuroscience.ucdavis.edu/node/57](http://neuroscience.ucdavis.edu/node/57)
³ [http://neuroscience.ucdavis.edu/grad/academics/advising](http://neuroscience.ucdavis.edu/grad/academics/advising)
⁴ [http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html](http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html)
1. **Written Exam Component**

   The written exam is administered in a computer lab after completion of the first year coursework. It is designed to be finished in 4 hours, though 6 hours is allowed (3 hour morning session, 3 hour afternoon session). It is approximately 1/3 basic facts, 1/3 problem solving/short answer, and 1/3 integrative essay and covers the knowledge base that is taught in NSC 201, 221, 222, 223, and 224A-B.

2. **Oral Exam Component**

   The oral exam is administered within a week following the written exam. It is designed to be 1.5 hours, though additional time may be granted on a case-by-case basis. The oral examines the student on areas of perceived weakness from the written exam and allows testing of the student’s ability to “think on their feet”.

3. **Outcomes**

   The possible outcomes are Pass, No Pass, or Fail and apply to both the written and oral components of the exam. If a student receives a No Pass on the first attempt, the exam may be re-taken within 3 months (with exceptions for special circumstances requiring approval by the testing and Educational Policy committees). If a No Pass is given for one or more individual sections of the exam, and a Pass is given for the other(s), the student need only retake the section(s) on which a No Pass was received. A student will be recommended for disqualification from the program if either of the following occurs:
   
   - The outcome of a second attempt is a No Pass.
   - The outcome of any attempt is a Fail.

b) **Qualifying Examination**

1. **Exam Timing**: This exam is to be completed within one year of passing the preliminary examination.

2. **The Proposal**

   The research proposal is modeled after an NIH proposal for a predoctoral fellowship (NRSA), with the addition of an overall in-depth introduction. The formatting of the proposal must follow NIH guidelines including:

   - Font: Arial 11; Margins: 0.5 inches; Single Spaced.

   The following sections must be included:

   a. An overall introduction to the proposal, reviewing relevant literature and putting the proposal into context (up to 5 pages). Note: this is not part of the NIH proposal format.

   b. Project Summary/Abstract (30 lines of text).

   c. Specific Aim(s) (1 page). Compactly outlines the main scientific questions addressed by the proposal. Should include hypotheses and a very brief description of what will be done to test the hypotheses.

   d. Research Strategy (6 pages). This should be modeled after the guidelines of an NRSA application, and should include significance, innovation, and approach. The student should clearly describe the methods under use, potential pitfalls, and what would be concluded from different possible outcomes. Preliminary data can be included in this section, but is not required.
In general, the document should explain why the experiments are being done, how they are being performed, and what will be concluded from different possible experimental outcomes. It should be remembered that the proposal is not a binding contract for the work to be done; normally the proposal evolves under the guidance of the Research Mentor. The proposal is to be given to the Qualifying Examination Committee at least 3 weeks in advance of the date for the oral portion of the exam.

3. Oral Portion of the Exam

   Structure of the exam. This is a 3-hour exam. It starts with the presentation of the proposal. It is expected that the committee members will have read the proposal in detail, so this section should be brief (approximately 20-30 minutes), perhaps offering more graphical support than in the proposal itself. Following this, there is to be a general discussion of the proposal, with examiners free to explore background (i.e., the student’s scholarship), methodology, and reasoning.

   Expectations. The proposal should be well researched, scholarly, and the presentation professional. The student should be fully in grasp of the rationale behind the proposed experiment, the methodology used to perform it, and what interpretations will be drawn from it. In short, the student is expected to show full professional competence as a scientist.

   Outcomes. Following Graduate Council policy, there are three possible outcomes: Pass, Not Pass, and Fail. The Exam committee’s unanimous vote is required for an outcome of Pass on the exam. If a student does not pass the exam, the committee may recommend that the student be reexamined one more time, but only if the Master Adviser concurs with the committee. The second exam must take place within two quarters of the first exam. The format of the second exam is the same as that of the first exam and may include the submission of an amended version of the proposal. The examination may not be repeated more than once. A student who does not pass on the second attempt is subject to disqualification from further graduate work in the program.

c) Dissertation

1. Exit Seminar

   The dissertation follows Plan B with a required exit seminar. Satisfaction of this requirement must be verified by the Dissertation Committee Chair. The Exit Seminar is a formal public presentation of the student’s research before the program faculty and students. The Dissertation Committee will not sign the Dissertation until after the exit seminar has taken place. Adequate scheduling of the exit seminar is the responsibility of the student.

2. Dissertation: General Requirements

   Filing of a Ph.D. dissertation with the Office of Graduate Studies is normally the last requirement satisfied by the candidate. The quarterly deadlines for completing this requirement are listed in the Schedule of Classes, which is available in the Bookstore as well as online, and are posted on the Calendar of the Office of Graduate Studies. A candidate must be a registered student or in Filing Fee status at the time of filing a dissertation, with the exception of the summer period between the end of the Spring

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5 http://registrar.ucdavis.edu/csrg/
6 http://gradstudies.ucdavis.edu/students/calendar.html
Quarter and the beginning of Fall Quarter. The dissertation is to be prepared, submitted and filed according to regulations instituted by the Office of Graduate Studies.  

9) **Normative Time to Degree**

Normative time to advancement to candidacy is seven quarters. Normative time in candidacy is an additional eight quarters. Normative time to degree is, thus, five years.

10) **Typical Time Line and Sequence of Events**

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<tr>
<th>Fall</th>
<th>Winter</th>
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<tr>
<td><strong>Year 1</strong></td>
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<td>NSC 200LB (3 units)</td>
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<td>NSC 201 (3 units)</td>
<td>NSC/NPB 222 (5 units)</td>
<td>NSC 223 (4 units)</td>
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<td>NSC 221 (4 units)</td>
<td>NSC 224A (2 units)</td>
<td>NSC 298 CS(^8) (1 unit)</td>
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<td>NSC 298 RCR(^9) (1 unit)</td>
<td>NSC 298 RCR (1 unit)</td>
<td>NSC 224B (2 units)</td>
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<td>NSC journal club (1 unit)</td>
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<td><strong>Year 2</strong></td>
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<td>NSC journal club (1 unit)</td>
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<td>Electives or 299 (11 units)</td>
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<td><em>Preliminary Examination</em></td>
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<th>Fall</th>
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<td><strong>Years 3-5</strong></td>
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<td>Electives or 299 (12 units)</td>
<td>Electives or 299 (12 units)</td>
<td>Electives or 299 (12 units)</td>
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<tr>
<td><em>Qualifying Examination</em>, normally no later than the fall quarter of the third year</td>
<td><em>Dissertation research and writing</em></td>
<td><em>Exit seminar</em>, normally by the end of the fifth year</td>
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</table>

11) **Sources of Funding**

For the first year, students are funded either by an NIH training grant or by a Neuroscience Graduate Group Fellowship. After the first year, students are funded either as GSRs or as TAs.

12) **PELP, In Absentia and Filing Fee Status**

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide.\(^{10}\)

13) **Leaving the Program Prior to Completion of the Ph.D. Requirements**

Students who leave the program prior to completing the requirements for the Ph.D. may be eligible to receive the M.S. degree if they have fulfilled all the requirements (see the M.S. Requirements section below). Students can use the Change of Degree Objective form available from the Office of the Registrar.\(^{11}\)

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\(^{7}\) [http://gradstudies.ucdavis.edu/students/degree_candidates.html](http://gradstudies.ucdavis.edu/students/degree_candidates.html)

\(^{8}\) Cognitive Neuroscience Graduate Supplemental Discussions

\(^{9}\) Responsible Conduct of Research Ethical Lecture Series

\(^{10}\) [http://gradstudies.ucdavis.edu/students/handbook/](http://gradstudies.ucdavis.edu/students/handbook/)

\(^{11}\) [http://registrar.ucdavis.edu/PDFFiles/D065PetitionForChangeOfGraduateMajor.pdf](http://registrar.ucdavis.edu/PDFFiles/D065PetitionForChangeOfGraduateMajor.pdf)
M.S. PROGRAM

1) Admissions Requirements

Students are not admitted directly to the M.S. program. The M.S. degree is normally only granted to Ph.D. students in Neuroscience who leave the program prior to completion and choose to exercise the change of degree objective option discussed in the Ph.D. Requirements (see section 13).

2) M.S. Plans I and II

Plan I. This plan requires 39 units of graduate (200-level) coursework in Neuroscience, exclusive of research (299) units, and a thesis.

Plan II. This plan requires 39 units of graduate (200-level) coursework in Neuroscience, exclusive of research (299) units. In addition, a comprehensive final examination is required of each candidate. No thesis is required.

Students may follow Plan II if they wish to change their degree objective to M.S. and have passed the Ph.D. Qualifying Exam prior to filing the Change of Degree Objective form. Students should follow Plan I if they wish to change their degree objective to M.S. prior to the Ph.D. Qualifying Exam and do not want to undertake the work required for the Qualifying Exam.

3) Course Requirements (39 units)

The course requirements for both Plan I and Plan II are identical to those stated for the Ph.D. program in the Ph.D. Requirements (see section 3).

4) Special Requirements

Students are required to serve as a teaching assistant (TA) for one quarter in a course in Neuroscience or a related area. Students are also required to pass the Preliminary Examination of the Ph.D. program as detailed in the Ph.D. Requirements (see section 8).

5) Committees

The Admissions Committee, Preliminary Examination Committee, and Graduate Student Advisory Committee are all identical to those discussed in the Ph.D. Requirements (see section 5). For students electing to follow Plan II for the M.S. degree, the comprehensive final examination is identical to the Qualifying Examination, as detailed in the Ph.D. Requirements (see section 8). For students electing to follow Plan I for the M.S., a Thesis Committee, consisting of a chair and four other faculty members nominated by the student in consultation with the Research Mentor and the Master Adviser and approved by the Office of Graduate Studies, in accordance with Graduate Council policy, guides the student through the process of writing the thesis and determines when the requirements for the degree have been satisfied. The Research Mentor is a member (but not chair) of the committee.

6) Advising Structure and Mentoring

The Advising Structure and Mentoring for the M.S. are identical to those discussed in the Ph.D. Requirements (see section 6).
7) **Advancement to Candidacy**

Every student wishing to be awarded an M.S. degree must file an official application for Candidacy for the Degree of Master of Science after completing at least one-half of their course requirements and at least one quarter before completing all degree requirements. The Candidacy for the Degree of Master form can be found on the Office of Graduate Studies web site. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student’s course plan after s/he has advanced to candidacy, the Master Adviser must recommend these changes to Graduate Studies. Students must have the Master Adviser and committee chair sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to the Graduate Program Coordinator, the student, and, if applicable, the Thesis Committee Chair. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department and the student will be told the reasons for the application’s deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding “I” grades in required courses, or insufficient units.

8) **Comprehensive Examination and Thesis Requirements**

*Comprehensive Examination:* For students who choose to file the Change of Degree Objective form after having passed the Qualifying Exam for the Ph.D., passing the Qualifying Exam counts as satisfying the comprehensive exam requirement for the M.S. degree.

*Thesis:* Research for the Master’s thesis is to be carried out under the supervision the student’s Research Mentor and the members of the Thesis Committee. The thesis may be an original contribution to knowledge in the field or a comprehensive literature review. A draft of the thesis is to be submitted to the Thesis Committee at least one month before the student plans to make requested revisions. All committee members must approve the thesis and sign the title page before it is submitted to Graduate Studies for final approval. Should the committee determine that the thesis is unacceptable, even with substantial revisions, the Master Adviser, in consultation with the Chair of the Graduate Group, may recommend to the Dean of Graduate Studies that the student be disqualified from the program. The thesis must be filed in a quarter in which the student is registered or on filing fee. The quarterly deadlines concerning filing are listed in the Schedule of Classes, which is available in the Bookstore as well as online, and are posted on the Calendar of the Office of Graduate Studies.

9) **Normative Time to Degree**

The normative time to degree is seven quarters.

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14 [http://gradstudies.ucdavis.edu/students/calendar.html](http://gradstudies.ucdavis.edu/students/calendar.html)
10) **Typical Time Line and Sequence of Events**

M.S. candidates follow the same Time Line as specified for Ph.D. students in the Ph.D. Requirements (see section 10). The only difference is that the degree objective is changed from Ph.D. to M.S. at some point in the typical sequence of events.

11) **Sources of Funding**

For the first year, students are funded either by an NIH training grant or by a Neuroscience Graduate Group Fellowship. After the first year, students are funded either as GSRs or as TAs.

12) **PELP, In Absentia and Filing Fee Status**

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide.15

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15 [http://gradstudies.ucdavis.edu/students/handbook/](http://gradstudies.ucdavis.edu/students/handbook/)