Helen Wills Neuroscience Institute/Neuroscience Graduate Program: Student Guide to the Qualifying Examination For Advancement to Candidacy for the Doctoral Degree

Purpose of the Examination

The aim of the Qualifying Examination is to evaluate the student's preparedness for a research career in neuroscience. The examination provides a means for a faculty committee to assess the ability of the student to use his/her knowledge and understanding of the fundamental facts and principles of neuroscience to solve current problems in the area of the student's thesis research and in related fields. The examination also allows the committee to judge the student's ability to think incisively and critically about both the theoretical and practical aspects of neurobiological research at a number of levels.

Eligibility

A student must have passed with a grade of B or better approved courses in at least three distinct subfields of neuroscience [either 3 graduate courses in three different subfields, or three graduate courses in two different subfields and an undergraduate course in a third subfield – see "Guidelines for Neuroscience Graduate Curriculum" for details about course requirements for the first two years of study]. In general, **the minimum course requirements must be fulfilled prior to the date of the exam**. In some cases the Head Graduate Adviser may allow this requirement to be fulfilled during the same semester that the qualifying exam is taken (note that advancement to candidacy will still require passing the approved courses with grades of B or better). **The qualifying exam is typically taken in the second semester of the second year of graduate study.** Extensions for the qualifying exam must be pre-approved by the Head Graduate Adviser, and are not given past the fall semester of the student's third year. Under special circumstances, students may be allowed to take the qualifying exam before the Spring semester of their second year. Approval for taking the exam early is based upon prior coursework and research experience and is at the discretion of the Head Graduate Adviser.

Committee Composition

- Qualifying Examination Committees are composed of four faculty; **the Chair and the outside member must be members of the Berkeley Academic Senate.**
- Adjunct faculty are eligible to serve, but not as Chair or outside member.
- Three of the four faculty members must be members of the Neuroscience Graduate Program.
- At least one of these three must be from the area in which the student is concentrating (i.e., cell/molecular/developmental, systems/computational, or cognition/brain/behavior), and at least one of the three must be from another area of neuroscience.
- The fourth, or **outside**, member must be a **non-affiliated faculty of the Neuroscience Graduate Program**.
- In cases where additional expertise is desirable, the student may suggest a fifth member for the committee. The fifth member may be a faculty member from another university (e.g., UCSF, Stanford, UCD).

Timetable for Preparation for the Examination

Phase I (before February 1, during the second year of study)

- The student **must** contact, in person, the Head Graduate Adviser or his/her designee.
- The student should submit to the adviser (1) an **outline** for the dissertation research area (the "inside topic") and (2) an **outline** for the "outside" (breadth) research proposition. The outside proposition must meet the criteria of an original, feasible research area distinctly different from the area of the student's dissertation research. Typically, for example, if a student is concentrating in the area of cognitive neuroscience, a project in the area of systems, or cell/molecular neuroscience will be required to fulfill the breadth requirement.
- Based on the areas of the thesis research and the outside proposition, the student, after consulting with the Head Graduate Adviser, proposes a Chair, two inside members, and one outside faculty member to serve as the Qualifying Examination Committee. The proposed committee is reviewed by the Neuroscience Graduate Adviser, who may make changes to ensure that: (a) the expertise of the committee is appropriate for the subject areas to be covered in the examination; and, (b) committee service is distributed as equitably as possible for both the faculty from HWNI and outside Departments. **Note that while the student should feel free to contact faculty about serving on his/her Qualifying Examination Committee, faculty assignments to these committees will be at the discretion of the Head Graduate Adviser.** The composition of the committee is then submitted to the Graduate Division for official approval.
- The student completes the **Application for Qualifying Examination form** [http://www.grad.berkeley.edu/degrees/pdf/qe_application.pdf] listing the three areas required for examination including: (a) the subject of the student's doctoral dissertation research; (b) the subject area to be covered in the outside research proposition; and, (c) the general subject area of neuroscience. The form must be brought to the Graduate Affairs Office **at least 6 weeks before the actual date of the examination** for the timely processing of The Application for the Qualifying Exam Form by the Graduate Division.
- Once the Qualifying Examination Committee has been appointed, the student should introduce himself/herself to the members and briefly describe the areas to be covered in the examination.

Phase II (before March 1, during the second year of study)

- The student **must** meet with the Chair of the Qualifying Examination Committee. At this meeting, the student presents **detailed outlines** for his/her two written research propositions. One of these propositions must be focused on the specific problem being addressed in the student's dissertation research; the other proposition must be focused on the specific subject area selected as the outside (breadth) topic during Phase 1 (see above). At this meeting, the Chair must reconfirm that the topic and outline of the outside proposition are appropriate, especially with regard to satisfying the breadth requirement.
- Once approval of both proposition topics and outlines has been secured from the Chair, the student has **three weeks** in which to compose and submit to the Chair **both** completed propositions.
- In preparing the proposition that describes the student's own dissertation research, the student is encouraged to consult frequently with his/her thesis mentor. In preparing the outside (breadth) proposal, the student may seek general advice, literature references, and general information from faculty who may be knowledgeable about the area that the student has selected. However, Berkeley faculty members are not permitted to participate directly in the conception, writing, revision, or practice ("pre-prelim") of the outside proposition.
- Both propositions should be written in the style of a grant proposal, i.e., Abstract, Specific Aims, Background & Significance, Experimental Plan, and Literature Citations. Both propositions should be as concise as possible and should under no circumstances exceed 10 single-sided double-spaced typewritten pages (12 point font). This strict page limitation does not include literature citations.

Phase III (before the end of the Spring Semester, during the second year of study)

- After the completed propositions have been submitted to the Chair, each of them are evaluated by the

Chair, or by another member of the committee designated by the Chair, within a week. The purpose of the evaluation is not to identify explicitly or correct specifically any logical flaws or experimental defects, but is to establish whether the propositions provide an adequate basis for examination of the student. However, the Chair does have the responsibility to inform the student if either proposition is unacceptable and to direct revision of the proposal to the extent needed for its approval.

- Once the propositions have been submitted and received approval, the student is expected to schedule and take the examination before the end of the Spring Semester. The Graduate Affairs Office assists the student in finding a suitable room for the examination when such help is needed.
- Before the official examination, the student should prepare a presentation of approximately 20 minutes for each proposition. The presentations should be used as a basis for holding practice sessions ("pre-Prelims") with senior graduate students and/or postdoctoral fellows/researchers who are knowledgeable about the subject matter of the student's thesis work and outside proposition topic, but are not exclusively members of the student's laboratory group.

Format of the Examination

- **It is the student's responsibility to circulate both written research propositions to all committee members at least one week prior to the scheduled examination date. Failure to adhere to this timetable may result in postponement of the exam.**
- During the oral examination itself, the thesis proposition is discussed first, followed by the outside proposal. In each case, the student should be prepared to defend in detail the described research. In addition, the student should expect to be questioned in considerable depth not only about the general areas of the propositions, but also about his/her general knowledge of his/her major field of study.
- The student is encouraged to use a chalkboard/whiteboard to outline his/her topics and to convey ideas to the committee during the course of the exam. The student is also allowed to provide one or two appropriate diagrams or figures separately, but **only** if this information would be difficult to convey on a chalkboard/whiteboard. Use of overhead transparencies, slide projectors, or electronic audio/visual media is not permitted.
- The students may bring into the examination room only a brief "one page" outline upon which they may rely during their presentation.

A typical Qualifying Examination lasts approximately three hours. Students must make sure that all committee members sign off on the **Qualifying Examination Report form** [http://www.grad.berkeley.edu/degrees/pdf/qe_report.pdf] which is due in the Graduate Affairs Office immediately after the end of the Examination.

Exam Failures and Retakes

In case of a failed exam, the student must re-take the exam before the end of the following semester if the original qualifying examination committee recommends re-examination.

Timeline

First Three Semesters

1st Year Fall Semester	***1st Year Spring Semester***	***2nd Year Fall Semester***
Core course[s] – 1st subfield	Core course[s] – 2nd subfield	Core course[s] – 3rd subfield
NEUROSC 291A	NEUROSC 291B	Teaching assignment #1
	NEUROSC 290	
	MCB 293 (for NIH TG trainees)	

Second Year Spring Semester

January	***February***	***March***	***April***	***May***
Decide on thesis topic	Contact QE committee Chair with outlines	Finish writing proposals	Finalize proposals and submit to Chair	1 week before QE – send proposals to ALL committee members
Decide on "outside" topic	Reconfirm the "outside" topic with Chair	Submit proposals to Chair for review	Finalize date/time for QE	Take QE
Write outlines for both proposals (1-2 pages max.)	Seek Chair agreement to both proposals	Make changes as advised	Seek help with room scheduling if necessary	Bring Report on QE form to the Graduate Affairs Office
Contact Head Graduate Adviser with outlines	After agreement, start writing proposals	Start the scheduling QE (it takes time!)	1 week before QE – send proposals to ALL committee members	
Decision on QE committee membership	Start the scheduling QE (it takes time!)		Take QE	
Bring Application to QE form to Graduate Affairs Office			Bring Report on QE form to the Graduate Affairs Office	