7. **Plan for evaluation of the program**

The program will be assessed by its general membership (both faculty and student) at the end of every academic year at the Neuroscience Graduate Program Annual Meeting. There is also a discussion of the program at the Annual Neuroscience Retreat at the beginning of every academic year. The retreat offers a unique perspective on the program because the attendees include not just the faculty and students, but also the postdoctoral fellows. The Graduate Council’s Program Review Committee typically reviews the new Master’s programs three years after students are first admitted. The first review of the Neuroscience MS program would be conducted jointly with the next review of the Ph.D. program. Then the two programs would be reviewed jointly based on the periodic graduate program review cycle of 7 years.

II. **Program**

1. **Preparation required for admission**

Preparation will be identical to that of the Ph.D. applicant, and are identical to those specified by the Graduate Studies Division at UC Davis.

2. **Foreign language**

There is no foreign language component to the Neuroscience Program.

3. **Program of study**

The Graduate Group offers as much flexibility as possible to students as they develop their scientific interests, while emphasizing the development of students into well-rounded neuroscientists. The required first-year core course is designed to provide a survey of the major issues and techniques in modern neuroscience, from molecules to cognition. In their second year, students are encouraged to build on their core neuroscience foundation by taking upper-level graduate elective courses. Individual course selections are arranged in consultation with the Graduate Group Master Advisor in the first year and then with the student's thesis advisor thereafter.

   a. **Specific fields of emphasis**

   None.

   b. **Plans: Master's I and/or II**
There are two options for getting a master's degree, as per university guidelines:
Both start with passing the core curriculum for the program: 18 units of
the core courses, 3 units of neuroanatomy, 9 units of research, and 6 units
of journal clubs. There are then two options for the completion of the
degree.

Plan I: Write a masters’ thesis. This can be either an experimentally based
work or a literature review depending on the student's interest. A thesis
committee consisting of three faculty members chosen by the student, in
consultation and approved by the master advisor and the Chair of the
Graduate Council. The thesis committee will guide the student and certify
the quality of the thesis.

Comprehensive examination.
Plan II: Pass the comprehensive examination.

c. Unit requirements

Regardless of the student's choice of Plan I or Plan II, all students are
required to take the 36 unit Core Curriculum.

d. Required and recommended courses

Required Neuroscience Core Curriculum

NSC 221 Cellular and Molecular Neuroscience Fall: Lecture - 5 hours;
Discussion -1 hour. Advanced course dealing with the cellular and
subcellular organization of the nervous system. Membrane channels,
sensory transduction, synaptic transmission and cellular aspects of
development and learning will be covered. Instructors: Chapman, Wilson

NSC 222 Systems Neuroscience Winter: Lecture - 5 hours; Discussion -1
hour. Advanced course covering the integrative and information-
processing aspects of nervous system organization. Topics include sensory
systems, motor function, sensorimotor integration, the limbic system, and
the neurobiology of learning and memory. Instructors: Usrey, Sutter, Jones

NSC 223 Cognitive Neuroscience Spring: Lecture - 5 hours; Discussion -1
hour. Neurobiological bases of higher mental function including attention,
memory, language Instructors: Olshausen, Yonelinas

NSC 203 Neuroanatomy Spring (5 weeks only): Lecture -5 hours;
laboratory - 3 hours. Gross and microscopic anatomy of the central
nervous system Instructor: Kumari
NSC 298 Neuroscience Journal Clubs
These courses vary per quarter.
See Attachment 7 for Elective Courses

4. **Field examinations**

Not Applicable

5. **Comprehensive examinations – written and oral.**

The M.S. Plan II student would be required to pass a comprehensive examination, identical in structure to the qualifying examination for Ph.D. students. The exam consists of two parts, written and oral, given within the span on one week by the six members of the standing Comprehensive Exam Committee. The written component comes first, and is a six-hour, closed-book exam, covering both facts and conceptual understanding. Following this, each student is given a single 1.5-hour oral exam, with questions from every member of the committee. This section is intended both to explore areas of perceived weakness as well as to allow students to expand on their answers to questions given in the written section.

The committee delivering the exam will be designed to span all of the 3 core topic areas in neuroscience. Members will serve two years, and will rotate off in a staggered way so that approximately half of the committee will have prior experience on any given year. The exam will contain content from the core courses and general knowledge of neuroscience.

The two parts of the exam will be weighted equally in deciding the outcome of the exam. Three possible outcomes exist: “pass”, “no-pass”, and “fail”. A no-pass outcome is appropriate when a student shows selective deficiencies, and these appear to be reparable. A variety of remedial options will allow such students to pass, which can include directed study, coursework, and re-taking part or all of the exam. A failure outcome will lead to the student being asked to leave the program.

6. **Thesis**

The thesis (Plan I only) can be either an experimentally based work or a literature review depending on the student’s choice. The project must be approved by the Chair of the Graduate Council on the Office of Graduate Studies’ Advancement to Candidacy Form. A thesis committee consisting of three faculty members chosen by the student and approved by the master advisor and the Office of Graduate Studies will guide the student and certify the quality of the thesis work. The approved thesis must be prepared in the form prescribed by the Graduate Council (Am. 1/24/72), then deposited by the candidate in the Office of Graduate Studies for transfer to the University Library.
7. **Final examination**
   Not Applicable

8. **Explanation of special requirements over and above graduate division minimums**
   The Neuroscience Core Curriculum is the minimum required to provide adequate breadth and depth of knowledge for Neuroscience, and contains 36 required units.

9. **Relationship of master’s and doctoral programs**
   The programs will be sister programs sharing all of the same resources, facilities, faculty, and staff. The students in both programs are required to take the exact same coursework and therefore will be treated as one class. This will help the small numbers of Master’s students to feel the camaraderie and support that the larger Ph.D. cohorts experience. They will not be divided until the end of year one when the Master’s students will choose between Plan I and Plan II.

10. **Special preparation for careers in teaching**
    Because teaching is a critical skill for an academic career in neuroscience research, our graduate students are recommended to serve as TAs for at least one undergraduate course. This requirement is usually met in the second year and students usually choose courses offered by the Neurobiology, Physiology, and Behavior Section of the Division of Biological Sciences. Many students find this experience to be highly educational and rewarding. As a support mechanism, we recommend that our students participate in the courses offered by the Teaching Resource Center, especially the TA Training Seminar they offer.

11. **Sample program**
   **Year 1**
   - **Fall**: Core course (Cellular, Molecular, and Developmental Neuroscience), Lab Rotation I, Elective Journal Club, Perspectives Seminars
   - **Winter**: Core Course (Systems Neuroscience), Lab Rotation II, Elective Journal Club, Perspectives Seminars
   - **Spring**: Core Course (Cognitive Neuroscience), Lab Rotation III, Elective Journal Club, Perspectives Seminars

   November 18, 2003
• Written and Oral Comprehensive Exam in mid-August after first year (Plan II only)

• Thesis Advisor must be selected by end of first year (Plan I only)

Year 2
• Research and an Elective Journal Club per Quarter, Perspectives Seminars, Completion of elective and required courses.

• Completion of part 2 of the comprehensive examination by end of second year (If Plan II only)

• Completion of Research and Thesis (Plan I only)

12. Normative time from matriculation to degree

The normative time will be approximately 2 years. For Plan I, the thesis committee and the Master Advisor will monitor the students' advancement and make sure they are making timely progress toward degree completion. For Plan II, the Master Advisor and the Comprehensive examination Committee will monitor the student's progress. Under either plan, if the student is making insufficient progress, he or she will be given an "unsatisfactory" on the annual progress report and will be placed on academic probation. The student may be disqualified from further study in the program in accordance with Graduate Council policies and Graduate Studies guidelines if the student's academic standing is not improved or appropriate criteria or measures are not met.

III. Projected Need

1. Student demand for the program

We currently have a small number of students in the Ph.D. program who would prefer to graduate with an MS degree. And, as mentioned in Section I, this program will fill a current void in neuroscience education, as there is only one other program that we could find in California that offers an MS in neuroscience. There are a large number of positions available in industry and academia that require a Master's degree. Also mentioned in Section I is the growing demand for trained scientists in the workforce. Many students would benefit from the additional training a MS degree can provide within a time frame that allows them to take full advantage of the current market.