

NEUR 99: SENIOR RESEARCH IN NEUROSCIENCE

FALL 2009-SPRING 2010

The Senior Research Program is designed to provide Neuroscience concentrators with an opportunity to engage in a year-long independent research project and to obtain course credit for this research. Senior Research is open to all seniors concentrating in Neuroscience, regardless of GPA. Neuroscience concentrators who have a distinguished academic record and who enroll in Senior Research may also be eligible for Honors in Neuroscience.

1. Selection of Senior Research Sponsor

The Concentration recommends that students begin to plan for Senior Research during their junior year as many students (and faculty) find it beneficial to spend the summer before their senior year working in the lab. Juniors should learn about research areas and contact possible Sponsors for next year; seek the Professor's oral agreement to accept you for senior research in the fall. Students who contemplate entering the Senior Research Program should first familiarize themselves with the research activities of the various concentration faculty. The Neuroscience Office (Volen Center 206) will provide to interested students a list of the faculty's research interests. Faculty research interests can also be found on the Brandeis Neuroscience web page at <http://www.bio.brandeis.edu/pages/faculty>. The Neuroscience Office also maintains a collection of previously accepted Senior Theses. Many research opportunities exist for freshmen and sophomores as well; some of these may serve as the basis for a Senior Research Project.

2. Enrollment in Senior Research and Application to the Honors Program

Having secured the agreement of a Sponsor, a student applies to enroll in Senior Research and, if appropriate, becomes a candidate for Honors by submitting an application to the Concentration during the first two weeks of his/her senior year. The application (attached) should contain the title and a brief description of the proposed research. Upon approval of the application, the student enrolls in NEUR 99 and "officially" begins work in the laboratory. **Enrollment in NEUR 99 requires the submission of an enrollment form to the University Registrar, and the form needs the signature of the faculty Sponsor and also that of the NEUR 99 Senior Research/Honors Coordinator.**

Eligibility for Honors is decided according to the following criteria:

- ❖ Senior Neuroscience concentrators who enroll in Neuroscience 99 and have a grade point average of 3.30 or better in all courses offered for concentration are automatically eligible for Honors.
- ❖ Senior Neuroscience concentrators who enroll in Neuroscience 99 and have a grade point average between 3.0 and 3.3 and who have completed (with a grade of B or better) one 100-level elective course are also eligible for honors (NOTE: BCHM 100a, NBIOL 140b do not count as 100 level courses for this purpose.)
- ❖ Senior Neuroscience concentrators who have a GPA below 3.0 and those with GPAs below 3.3 who do not enroll in a 100-level elective courses, may still enroll in NEUR 99 and carry out a Senior Research Project but will not be candidates for Honors.

3. Credit for Senior Research

Candidates who want credit for Senior Research must register for NEUR 99, which is a year-long, two-semester course. This involves filling out a form available at the Registrar's office, or on the Registrar's web site: <http://www.brandeis.edu/registrar/forms.html>

4. Requirements for Senior Research, 1st (Fall) semester

At the completion of the first semester of the year-long senior research program (NEUR 99), students will write a paper which reviews the literature in the scientific field pertinent to their research and includes a bibliography of cited papers. A copy is given to the faculty research sponsor and also to the Senior Research/Honors Program coordinator.

5. Evaluation of Senior Research and Recommendation for Honors

A formal Senior Thesis is required of all students enrolled in NEUR 99. The thesis should consist of an Abstract of not more than 250 words; an Introduction that presents a reader with adequate information about the relation of the research problem to current knowledge in that area; a Materials and Methods section in sufficient detail that someone else could repeat the work; Results; a Discussion that includes a critical evaluation of the results, possible sources of error, and significance in relation to other findings; and a Bibliography of cited references (in the style used by the journal Genetics). The thesis is due at the end of the Spring semester (see dates below). (Note: You will be able to use all or some of your fall semester paper when you write your senior research thesis.)

Students who are **not** candidates for Honors submit the Senior Thesis to their Research Sponsor and also to the Senior Research/Honors Coordinator. The Research Sponsor is responsible for evaluating the work and assigning a grade for NEUR 99. Students who are **candidates for Honors** are evaluated differently. The Research Sponsor assigns a grade for NEUR 99 based on the student's research and thesis. In addition, students present their experimental findings in writing and also give an oral presentation of their work to a Senior Research Committee, composed of the Research Sponsor plus two additional faculty members. If the thesis, oral presentation, and GPA warrant, the faculty may recommend that such students graduate with Honors, High Honors, or Highest Honors in Neuroscience.

Senior Research Committees are assigned for each student toward the end of the academic year. Students are usually asked to submit copies of their thesis to their committees a week before classes end and are scheduled to give their oral presentations the last day of the semester. Oral presentations are scheduled for one hour and should include a 20 minute presentation including an introduction that shows why the work was undertaken and what goals were set. Presentation of the results may include the use of a blackboard, posters, or slides. The talk should conclude with a discussion of the significance of the results. Questions may be asked by the committee during or after the presentation.

6. Senior Research and Honors Coordinator

Dr. Joan Press

Rosenstiel Center room 511

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press@brandeis.edu

Timetable for 2009-2010

FALL SEMESTER, 2009

BEFORE September 10, 2009:

1. Enroll in NEUR 99: turn in to the Registrar's office a NEUR 99 course enrollment form (obtained from Registrar's office) signed by Dr. Press **and** your research Sponsor.

2. Return completed Senior Research/Senior Honors petition to Neuroscience Office (Judy Heinrich or Jean Wong) in Volen 206.

BY December 15, 2009:

All NEUR 99 students: review paper on your field of research **is due**. Submit one copy to your faculty sponsor and one copy to Dr. Press

SPRING SEMESTER, 2010

BEFORE Feb. 1, 2010:

Enroll in NEUR 99 as above (two signatures required).

BY April 20, 2010: THESIS IS DUE

Students NOT doing honors: Write a Senior Research thesis (see guidelines above). *There is no oral presentation or defense of the thesis.* Give copies to your Research Sponsor (and co-sponsor) and to Dr. Press by the deadline specified.

Honors candidates: Write a Senior Honors Research thesis (see guidelines above). Give one copy to each member of your Faculty Research committee by the deadline specified. You will be notified as to the faculty composition of your committee as well as the date, time, and room assignment for your oral presentation. Email the title of your Senior Honors Research thesis to Dr. Press.

May 6, May 7, and May 10, 2010: Oral defense for Honors candidates

Public oral presentation and defense of your research and thesis before assigned Faculty Research committee.

May 14, 2010: Honors candidates: final version of Honors thesis is due

A copy of the *final version* of your Senior Honors Research thesis, including any revisions required by your Faculty Research committee, is due in the Neuroscience office (Volen 206) by 4:00 pm.

KEEP THESE PAGES (1-3).

THE NEXT 2 PAGES ARE THE PETITION TO BE COMPLETED AND RETURNED TO THE NEUROSCIENCE OFFICE, VOLEN 206.

CONCENTRATION IN NEUROSCIENCE
Volen National Center for Complex Systems

Undergraduate Application/Petition for Senior Research and/or for Honors in Neuroscience

Submit this form to Neuroscience Office (Volen 206) by **September 10, 2009**.

NAME: _____
(Print) First Last Class Mailbox # _____

Email _____

I request to register for the Senior Research Course. I also request to be a candidate for Honors in Neuroscience. **(Cross out the latter if not applicable)**. The information below is offered in support of my request.

NEUR 99 to be taken with: _____
(Name, Research Sponsor)

Title of research project: _____

Brief resume of proposed research: _____

I understand that three typewritten copies of my research report or three reprints of a published article must be submitted to the Secretary, Center for Complex Systems, no later than one week before the last day of classes of my final, academic year.

My grade point average calculated from all courses offered toward the Neuroscience concentration is: _____

(Student's Signature)

If your Science GPA is less than 3.3 but higher than 3.0, you will still be eligible for Honors if you take a 100-level Neuroscience course and earn a grade of B or better. (Note: BCHM 100a and NBIO 140b do not count for this purpose as 100-level elective courses). Please list the 100-level courses you plan to take towards Honors in Neuroscience.

I accept this student for NEUR99 (Senior Research) and nominate this student as a candidate for Honors in Neuroscience.

(Research sponsor's signature & date)

TO BE COMPLETED BY RESEARCH SPONSOR

You are the research sponsor for an undergraduate student conducting Neuroscience research. If the research to be conducted by this student involves any of the potential hazards listed below, please put a check next to that hazard:

A. Does the proposed work involve potential hazards:

_____ Yes _____ No

If yes, these hazards may be clarified as:

- _____ radiation of radioactivity hazards
- _____ chemical hazards, such as handling of drugs, poisonous or explosive materials.
- _____ physical hazards, such as high voltages, high pressure, intense laser sources.
- _____ microbiological hazards, such as infectious or disease-producing bacteria or viruses.
- _____ recombinant DNA or genetic engineering.
- _____ other (please specify) _____

I will provide appropriate safety instructions as required. _____ Yes _____ No

_____ Faculty Research Sponsor _____ Date

B. Does the proposed work involve the use of human subjects:

_____ Yes _____ No

If yes, I will insure that this project receives human subjects approval from the University Committee on Protection of Human Subjects in Research (IRB) prior to beginning the work.

_____ Faculty Research Sponsor _____ Date