

NEUR 99: Senior Research and Senior Honors in Neuroscience

Information and Petition

(1) Read the information on pages 2-4, including the timetable of deadlines. Detach and **keep** these pages for yourself.

(2) To enroll in NEUR 99a for the fall semester, complete the NEUR 99 petition (pages 5-7) and meet with Prof. Paul Miller (NEUR 99 Coordinator). **Please ensure you email Prof. Miller at pmiller@brandeis.edu by August 24** to arrange a time to meet. **Bring pages 5-7 with you to the meeting.** The NEUR 99 Coordinator will enroll you in NEUR 99 assuming the petition is complete and the faculty mentor and project requirements have been met.

(3) **To enroll in NEUR 99b for the spring semester:** if you have already enrolled in NEUR 99a in the fall, you do not need to do the petition again but you must **inform the NEUR 99 Coordinator during the week of Jan. 17-23, 2017 that you wish to enroll in NEUR 99b.** If you are enrolling in NEUR 99 for the first time (e. g., you did NEUR 93 in the fall), you must **complete the petition as well as meet with the NEUR 99 coordinator** during the week of **Jan. 17-23, 2017.**

NEUR 99 Senior Research /Honors Coordinator

Dr. Paul Miller

Volen Center, Room 252, x6-2890

pmiller@brandeis.edu

NEUR 99: Senior Research and Senior Honors in Neuroscience

The Senior Research program is designed to provide an opportunity for students concentrating in Neuroscience to participate in a **two-semester** long independent research project during their senior year and to receive both course and elective credit for that research. Any senior concentrating in Neuroscience can participate in Senior Research (NEUR 99) and ask to be considered for Senior Honors. Eligibility for honors is determined by the student's academic record and research performance.

Selection of Senior Research Sponsor The neuroscience concentration recommends that students begin to plan for senior research during sophomore or junior year. Many students find it beneficial to spend the summer before their senior year working in the sponsor's lab. Research interests of Neuroscience Concentration faculty can be found on the website http://www.bio.brandeis.edu/faculty/list_programNeuro.html. Students should contact possible faculty sponsors and seek the sponsor's agreement to accept you for senior research in their lab.

How to Enroll in NEUR 99 Having secured the agreement of a Neuroscience faculty sponsor, a student petitions to enroll in Senior Research (NEUR 99). The student **completes the attached petition** and makes an appointment with the NEUR Coordinator (Prof. Paul Miller) by the deadline specified in the timetable below. The student also needs to **enroll in NEUR 99**: this will happen automatically after the petition is handed in to the NEUR Coordinator.

Course Requirements for 1st Semester of NEUR 99 (usually NEUR 99a).

At the completion of the first semester of NEUR 99, the student writes a paper that reviews the literature in the scientific field pertinent to his/her research and includes a bibliography of cited papers. Some suggestions for the paper:

In a **minimum** of 8 pages of double-spaced text, this review should describe and discuss the scientific literature that is important for the problem being investigated. If there are models or hypotheses, the review should describe what they are. What evidence supports or negates the models? What is the specific question or problem being explored and how will it be solved? The review should include references in the text and provide a bibliography containing those citations [the bibliography does not count toward the 8 pages of text]. This review will be useful when writing the introduction to the senior thesis.

A copy is given to the faculty sponsor and a pdf copy is submitted electronically to the Biology office by the designated deadline (see timetable).

Course Requirements for 2nd Semester of NEUR 99 (usually NEUR 99b).

At the completion of the second semester of NEUR 99, the student writes a formal **Senior Research thesis** which contains the following sections:

Title Page: includes student's name, the title of the senior research, and date.

Abstract (not more than 250 words): summarizes the nature of the research project, the results obtained, and the relevance of those results.

Introduction: poses the research question that was asked in the context of current knowledge in the relevant field.

Materials and Methods: provides in sufficient detail all aspects related to how the experiments were conducted.

Results: provides a written description along with figures and tables, of the experimental data obtained.

Discussion: evaluates the results obtained and their relevance and significance to current models and data in the field.

References: includes complete citations (authors' names, paper titles, journal, volume, page, year). See the journal *Neuron* for examples.

The thesis is given to the research sponsor and a pdf copy is submitted electronically to the Biology office by the deadline designated in the time table (below).

Candidacy for Senior Honors

To become a *candidate* for Senior Honors, the student enrolls in two semesters of NEUR 99 in senior year and completes the NEUR 99 petition including the section asking to be considered a *candidate* for Senior Honors. Senior Honors is the departmental award for Distinction in Neuroscience and requires both excellence in laboratory research and a good academic record (GPA eligibility):

- ❖ Neuroscience majors enrolled in NEUR 99 are eligible for honors if they have a **Neuroscience FOC GPA of 3.0 or better and** if they have achieved a **B+ or better in both NEUR 99a and NEUR 99b**. Also, the student's faculty research mentor must support the student's honor candidacy.

Senior Honors Requirements All the 1st and 2nd semester NEUR 99 course requirements given above for Senior Research apply to *candidates* for Senior Honors. The Honors candidate must write an Honors thesis using the format of the Senior Research thesis (see above) and give a **public oral presentation and defense** of his/her work to the Faculty Research Committee, which is composed of the student's research sponsor and two other Neuroscience concentration faculty members. The oral presentation and defense should last one hour. Typically, the candidate prepares a 30-35 minute talk that includes an introduction that shows why the work was undertaken, what goals were set, the results obtained and why they are significant. Throughout this presentation, the research committee members will ask questions. Presentations may include the use of a blackboard, handouts, slides, overhead transparencies, and/or Powerpoint projections, etc. Each member of the research committee evaluates the written thesis and oral presentation/defense and makes a recommendation to the Neuroscience concentration faculty that the candidate graduate with no Honors, Honors, High Honors, or Highest Honors. Assuming GPA eligibility has been met, these recommendations are considered by the Department of Neuroscience faculty who make the final determination about the candidate's Honors status.

NEUR 99 TIMETABLE FOR 2016-2017 ACADEMIC YEAR

FALL SEMESTER 2016

(1) Contact Prof. Miller by August 24, 2016: *To enroll in NEUR 99a, meet with the NEUR 99 Coordinator and bring the completed NEUR 99 petition* (pages 5-7) with you. If you want to do NEUR 99 with someone who is not a NEUR faculty, you need approval from the NEUR 99 Coordinator and signature of a Neuroscience faculty co-sponsor.

(2) Deadlines for NEUR 99 Review or Senior Thesis:

(a) If you are a Senior Honors Candidate and are defending at the end of Fall semester:

-by Dec. 2, 2016, 3 pm: Give one copy of your **Senior Honors Research thesis** to each member of your Faculty Research Committee. You will be notified beforehand as to the faculty composition of your committee.

-on Dec. 8, 2016: Honors Oral Presentation and Defense [Dec. 9 is a backup date]

(b) If you are concluding Senior Research in the Fall (2 semesters) but are NOT an Honors Candidate:

-by Dec. 19, 2016, 3:00 pm: Your **Senior Research thesis is due**. Submit one copy to your faculty Sponsor and send an electronic pdf copy to the Biology office.

(c) If you are doing NEUR 99a in the Fall and intend to do NEUR 99b in the Spring (whether or not as Honors):

-by Dec. 19, 2016, 3:00 pm: The **review paper on your field of research is due**. Submit one copy to your faculty Sponsor (co-sponsor) and send an electronic pdf copy to the Biology office.

SPRING SEMESTER 2016

(1) During the week of Jan. 17-23, 2017: If you were enrolled in NEUR 99a in the Fall, do not complete the petition again but email the NEUR 99 Coordinator to enroll you. If you are starting NEUR 99 this Spring semester and will conclude NEUR 99 in Fall 2016, or if you are a senior combining NEUR 93 (Fall) and NEUR 99b (Spring), complete the NEUR 99 petition, meet with the NEUR 99 Coordinator and bring pages 5-7 with you.

(2) Deadlines for NEUR 99 Senior Thesis:

(a) If you are a Senior Honors Candidate and are defending in the Spring Semester:

-by April 28, 2017, 3:00 pm: Give one copy of your Senior Honors Research thesis to each member of your faculty research committee. You will be notified beforehand as to the faculty composition of your committee.

-on May 4, 2017: Honors Oral Presentation and Defense [May 5 and 6 are backup dates]

-by May 12, 2017, 3:00 pm: If *revisions* are required by your research committee, send a *final version* of your Senior Honors Research thesis to your faculty sponsor and an electronic pdf copy to the Biology office.

(b) If you are NOT doing Senior Honors but are Concluding Senior Research in the Spring, or if you are Combining NEUR 93a (Fall) and NEUR 99b (Spring):

-by May 12, 2017, 3:00 pm: Your **Senior Research thesis is due**. Submit one copy to your faculty sponsor and send an electronic pdf copy to the Biology office.

THE NEXT 3 PAGES ARE THE NEUR 99 PETITION. Complete these 3 pages and bring them to your meeting with the NEUR 99 Coordinator.

PETITION FOR NEUR 99 SENIOR RESEARCH AND SENIOR HONORS IN NEUROSCIENCE

Student's Name: _____
(Print) First Last

Telephone #: _____ Mailbox #: _____

Email: _____

A. Petition to Enroll in Senior Research (NEUR 99)

I will take NEUR 99 with: _____
(PRINT the Name of your Neuroscience Research Sponsor)

Title of research project:

Brief synopsis of proposed research:

Fill in the section below if your Sponsor is NOT a member of the Brandeis Neuroscience Department:

Institution and Department affiliation of your Sponsor: _____

Telephone number and e-mail address of your Sponsor: _____

Brief synopsis of proposed research:

Fill in the section below if your Sponsor is NOT a member of the Brandeis Neuroscience Department:

Neuroscience Dept. Co-Sponsor: Print name: _____

Signature: _____

Permission is given for NEUR 99 to be taken with the above (non-Neuroscience Dept.) Sponsor:

Signature of NEUR 99 Coordinator

I understand that taking Senior Research (NEUR 99) **requires that I submit both a written review** (1st semester) **and a senior thesis** (2nd semester) to my research sponsor by the deadlines specified on the timetable for this academic year:

Student's Signature

B. Petition for *Candidacy* for Senior Honors in Neuroscience

Eligibility for Honors will not be determined until the conclusion of the senior year and includes a Senior Honors thesis, an oral presentation and defense, and a GPA requirement.

I understand that candidacy for Senior Honors requires a final GPA of *at least 3.00* in science courses offered to fulfill the Neuroscience concentration (major) **AND an average of B+ or better in both NEUR 99a and 99b.**

Student's signature

C. To be completed by the Research Sponsor

I accept this student for NEUR 99 (Senior Research) and, if applicable, as a candidate for Honors in Neuroscience. I will provide appropriate safety instructions as required for each hazard (checked off below) that may be encountered by this student while conducting research in my laboratory.

Sponsor's signature

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:

radiation or radioactivity

chemical hazards, e. g., drugs, poisonous or explosive materials, carcinogens

physical hazards, e. g., high voltages, pressure, or temperature; intense laser sources

microbiological hazards, e. g., infectious or disease-producing bacteria, viruses, etc.

recombinant DNA or genetic engineering

use of or exposure to human tissues/cells/fluids/samples, etc.

other (please specify) _____

Does the proposed work involve the use of human subjects: yes or no [circle one]

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.

Sponsor's signature