

NEUR 99: Senior Research and Senior Honors in Neuroscience Information 2023-2024

To enroll in NEUR 99A for Fall semester: Complete the 99 Petition [online](#) **no later than Sept 6, 2023**. The neuroscience program will send you further instructions so you can register in NEUR 99 if the petition is complete, your faculty research sponsor has filled their separate form, and project requirements have been met. *Please note that you must have a GPA of 3.0 or higher in the Neuroscience Major in order for you to be eligible to enroll in Honors, but not to do senior research. We will be checking GPAs to determine eligibility, based on requirements for the BA degree.*

To enroll in NEUR 99b for Spring semester: if you enrolled in NEUR 99a in the previous Fall, you do not need to submit the petition again but you must **email the Neuroscience Program at neuroscience@brandeis.edu no later than Jan. 14, 2024** 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 [online 99 Petition](#) no later than Jan. 14, 2024**. The neuroscience program will send you further instructions so you can register in NEUR 99 if the petition is complete, your faculty research sponsor has filled their separate form, and project requirements have been met.

NEUR 99: Senior Research and Senior Honors in Neuroscience

The Senior Research Program provides an opportunity for students concentrating in Neuroscience to do a **two-semester-long** independent research project during their senior year and to receive both course and elective credit for that research. Research must ask and attempt to answer a novel question in **neuroscience**, with the goal of contributing to neuroscience knowledge. Any senior concentrating in neuroscience regardless of GPA can participate in Senior Research (NEUR 99) and ask to be **considered** for Senior Honors (see NEUR 99 petition). Eligibility for honors is determined by the student's research performance and final academic record.

1. NEUR 99 Senior Research.

Students may seek the agreement of any member of the faculty in the Brandeis Neuroscience program as their research sponsor. If a student wishes to do research with a Brandeis professor in another department (e.g., Biochemistry, Chemistry), or with a faculty member at another institution in the Boston area, the student must **receive permission from the NEUR 99 Research Coordinator** to do so. If a student does NEUR 99 research with a non-Biology department faculty member (including non-Brandeis), the student must find a **co-sponsor** from the Brandeis Neuroscience faculty, and this person **must be able to evaluate the proposed research**. In all cases, the proposed research must have a **neuroscience** basis and ask a **neuroscience** question.

NEUR Course Credit NEUR 99 is a **two-semester course sequence restricted to seniors**. Each of NEUR 99a and b is worth 4 credits and **requires a minimum time commitment of 12 hours per week**. A student should not take NEUR 99 as a one-semester course unless they have previously taken NEUR 93 (see below). Two semesters of NEUR 99 may be used as **one** elective toward the Neuroscience major. To claim the elective credit, the student must complete the Registrar's online major/minor substitution form, which will be reviewed by the Undergraduate Advising Head. (Note that the credit will not appear in a student's Workday audit until the successful completion of the second semester of BIOL 99.)

Combining NEUR 93 and NEUR 99

NEUR 93 is a **one-semester-long** research internship (see NEUR 93 petition). Typically, students who take NEUR 93 intend to do only one semester of research. However, a student who really likes the NEUR 93 experience may want to continue doing research, and if this student is a **senior**, they

can then take one semester of NEUR 99. The NEUR 99 research must be done with the **same research sponsor** as NEUR 93 **and** must be taken the semester **immediately** after NEUR 93 was taken. This two-semester combination of NEUR 93 and NEUR 99 can be used as one Neuroscience elective (and also as Senior Research) so long as the student (i) **fulfills the NEUR 93 requirements** (see NEUR 93 for details), and (ii) **writes a senior research dissertation (see below) at the conclusion of NEUR 99**. The NEUR 99 senior dissertation may incorporate some of the NEUR 93 report but it must have a longer review and introduction, be more detailed, contain much more data, and have a lengthier discussion. It is unlikely that the two-semester combination of NEUR 93 and NEUR 99 will provide research sufficient for senior honors. However, a three-semester combination of research courses may also be taken: NEUR 93 in **spring of junior year or the summer before senior year**, followed by two semesters of NEUR 99 in senior year. This three-course combination will yield one elective for the Neuroscience major and there may be sufficient research accomplished for candidacy for senior honors.

How to Enroll in NEUR 99

The student should meet with their faculty research sponsor (and co-sponsor, when appropriate). The student then submits the completed [NEUR 99 Petition online](#). The Neuroscience office will then email the research sponsor (and co-sponsor, when appropriate) a Sponsor's Agreement form to complete. The enrollment application will be complete only when the student and research sponsor (and co-sponsor, when appropriate) have submitted their forms. The Neuroscience office will then send a further instruction to the student so they can enroll in NEUR 99. Note that you must be on campus or connected to the Brandeis VPN in order to access the online petition.

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 their research and includes a bibliography of cited papers. Requirements for the review paper:

In a **minimum** of 8 pages of double-spaced text, the student 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.

The student must give their review to the **Brandeis** research sponsor or co-sponsor **and** send a PDF copy to neuroscience@brandeis.edu in the Neuroscience office by the deadline (see timetable).

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

At the completion of the 2nd semester of NEUR 99, students write a **Senior Research thesis** that contains the following sections:

Title Page: includes student's name, the title of 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 *Cell* for examples.

The student must give the thesis to the **Brandeis** research sponsor or co-sponsor **and** send a PDF copy to neuroscience@brandeis.edu in the Neuroscience office by the deadline (see timetable).

Students who are taking **NEUR 199** should follow the Thesis and Dissertation Guide found here: <https://www.brandeis.edu/gsas/student-resources/thesis-dissertation-guide.html>

2. Candidacy for Senior Honors.

To become a **candidate** for Senior Honors, students must have a GPA of 3.0 or higher in the Neuroscience major, based on the requirements for the BA degree, and must enroll in two semesters of NEUR 99 in senior year and complete 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 strong academic record (GPA eligibility): Neuroscience majors enrolled in NEUR 99 are **eligible** for honors if they obtain a **B+ or higher in both NEUR 99a and NEUR 99b, and write and defend a thesis**. Also, the student's faculty research mentor must support the student's honors 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 their work to a designated Faculty Research Committee, which is composed of the student's research sponsor (and co-sponsor, when appropriate) and two additional faculty members in the Neuroscience Department. 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, and/or Powerpoint presentations, etc. Each member of the research committee evaluates the written thesis and oral presentation/defense and makes a recommendation to the Neuroscience 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. Students will learn about their honors status at graduation.

NEUR 99 TIMETABLE FOR 2023-2024 ACADEMIC YEAR

Fall Semester 2023

No later than **September 6th**: To request enrollment in NEUR 99a, complete and submit the online NEUR 99 petition. If you want to do NEUR 99 with someone who is not a member of the Brandeis faculty, you will need a Brandeis faculty co-sponsor and approval from the NEUR 99 research coordinator.

Deadlines for NEUR 99 Review or Senior Thesis:

If you are a Senior Honors Candidate who is defending at the end of Fall Semester:

by **November 27th at 3pm**: Send a PDF of your Senior Honors Research thesis to your Brandeis research sponsor or co-sponsor and to the other two members of your faculty research committee (and give paper copies, if asked). You will be told beforehand who the committee members are.

on **December 11th, 12th, and 13th**: Honors Oral Presentation and Defense

If you are concluding Senior Research in the Fall (it is your second semester of NEUR 99) but are not an Honors Candidate:

by **December 18th**: Send a PDF of your Senior Honors Research thesis to your Brandeis research sponsor or co-sponsor and to the Neuroscience office.

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

by **December 18th**: The review paper on your field of research is due. Send it as a PDF to your Brandeis research sponsor or co-sponsor and to the Neuroscience office.

If you are doing NEUR 199a in Fall and intend to do NEUR 199b in Spring:

by **December 18th**: The review paper on your field of research is due. Send it as a PDF to your Brandeis research sponsor or co-sponsor and to the Neuroscience office.

Spring Semester 2024

During the week of **January 8th and no later than January 12th**: If you took NEUR 99a in the Fall, email the [Neuroscience Program](mailto:neuroscience@brandeis.edu) (neuroscience@brandeis.edu) to enroll you in NEUR 99b. If you are starting NEUR 99 this Spring semester and will conclude NEUR 99 in Fall 23, or if you are a senior wanting to combine NEUR 93 (Fall) and NEUR 99b (Spring), complete and submit the online NEUR 99 petition. If you want to do NEUR 99 with someone who is not a member of the Brandeis faculty, you will need a Brandeis faculty co-sponsor and approval from the NEUR 99 Research Coordinator.

Deadlines for NEUR 99 Senior Thesis:

If you are a Senior Honors Candidate and are Defending in the Spring Semester:

by **April 17th**: Send a PDF of your Senior Honors Research thesis to your Brandeis research sponsor or co-sponsor and ask for feedback by **April 22nd**. You then have time to incorporate any feedback and send the final version to your research sponsor and the other members of your committee by **April 24th** (and give paper copies, if asked). You will be told beforehand who the

committee members are. *If you are observing Passover, the final version of your thesis is due to your committee by April 25th.*

on **May 1st, 2nd, and 3rd**: Honors Oral Presentation and Defenses

by **May 8th**: If revisions are required by your research committee, send a final version of your Senior Honors Research thesis to your faculty sponsor and a pdf copy to the Neuroscience office.

If you are a Senior Honors Candidate enrolled in **NEUR 199** and are Defending in the Spring Semester:

by **April 17th**: Send a PDF of your Senior Honors Research thesis to your Brandeis research sponsor or co-sponsor and ask for feedback by **April 22nd**. You then have time to incorporate any feedback and send the final version to your research sponsor and the other members of your committee by **April 24th** (and give paper copies, if asked). You will be told beforehand who the committee members are. *If you are observing Passover, the final version of your thesis is due to your committee by April 25th.*

on **May 1st, 2nd, and 3rd**: Honors Oral Presentation and Defenses

by no later than **May 8th**: If revisions are required by your research committee, send a final version of your Senior Honors Research thesis to your faculty sponsor and a pdf copy to the Neuroscience office.

Complete the Certification of Master's Thesis Acceptance form and submit to Richard Cunnane at rcunnane@brandeis.edu, neuroscience@brandeis.edu, and your thesis advisor.

Submit your thesis to ProQuest.

Further instructions can be found here: <https://www.brandeis.edu/gsas/student-resources/thesis-dissertation-guide.html>

If you are not doing Senior Honors but are concluding Senior Research in the Spring:

by **May 8th**: Send a PDF of your Senior Honors Research thesis to your Brandeis research sponsor or co-sponsor and to the Neuroscience office.