

Dual B.S./M.S. Program in Neuroscience Handbook 2022-2023 Academic Year

Dual B.S./M.S. Program in Neuroscience

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B.S. in Neuroscience Advisor: <https://advisement.gsu.edu/category/STEM/>

Dual B.S./M.S. Program in Neuroscience Advisors: casdualdegree@gsu.edu

Overview

The Neuroscience Institute offers a combined Bachelor of Science (B.S) and Master of Science (M.S) degree in Neuroscience. This five-year program is designed for neuroscience undergraduates, who are deeply interested in neuroscience, to gain additional research experience as they prepare for graduate/professional school, or for students looking for additional education in neuroscience to leverage for biomedical-based careers. The first three years of the curriculum match our B.S. in Neuroscience program, with the fourth and fifth years including additional M.S.-level course requirements and research experience. Students must also produce and submit either a Non-Thesis Master's Capstone Project, the form of which is defined in conjunction with their faculty research mentor, or, more rarely, produce and defend a Master's Thesis. General questions about the dual-degree program can be found on the College of Arts and Sciences website: <https://cas.gsu.edu/academics-admissions/undergraduate-learning/dual-degree-programs-overview/>

Funding

The Neuroscience Institute does not provide guaranteed support in the form of stipends, tuition waivers and/or Graduate Teaching Assistantships (GTA) for students during their time in the M.S. portion of the program. However, there are other possible opportunities for stipend/tuition waiver support:

- Graduate Teaching Assistantships in other departments; in the Department of Biology, GTA positions require unpaid internship activities in summer prior to commencing duties in Fall and subsequent semesters*
- Graduate Teaching Assistantships in the GSU 1010 (Introduction to GSU) program; these opportunities begin in Fall semester and can continue through Spring semester*
- Appointment as a paid Graduate Research Assistant with your faculty research mentor*

* *Tuition waivers for Graduate Teaching Assistantships and Graduate Research Assistants require registration for at least 12 credit hours per semester. All these opportunities **require** contacting the Dual Degree Graduate Coordinator in Neuroscience (Dr. Aras Petrulis).*

Admission requirements

The Dual B.S./M.S. Program in Neuroscience is available to all undergraduate Neuroscience majors who maintain a minimum overall (GSU & transfer) GPA of 3.5. Students may apply at any time once they have taken between 30-90 credit hours. We generally accept students who have completed NEUR 3000 but who have not taken more than one 4000-level NEUR elective (to not reduce the opportunities for taking 4000-level electives at the 6000-level). Consequently, it is best if students apply to the program while they are enrolled in NEUR 3000.

Applying to the program

1. Students should contact the college's dual degree office: casdualdegree@gsu.edu, and complete the online form: [Dual Degree Application](#). The college will make a dual degree program admission decision within two to four weeks of the department review of the applicant's materials (from online application form).
 - *Please note: this application does not guarantee admission to the graduate portion of the program.*
2. Make an appointment (via email: apetrulis@gsu.edu) with the Dual Degree Graduate Coordinator (Neuroscience; Dr. Aras Petrulis) to discuss the program (after reading this guidebook carefully).

Degree Requirements

Students accepted into dual undergraduate/graduate programs use the [Graduate Course Plan Approval Form](#) **each term** to gain approval for taking courses during their senior year. Course plans should be developed in consultation with your undergraduate advisor and the Dual Degree Graduate Coordinator (or designee).

Undergraduate degree requirements

Students should use the undergraduate neuroscience degree catalog and discussions with their undergraduate advisors to guide their undergraduate course choices. Up to 12 credits in the undergraduate program degree requirements in Area G: neuroscience core (LABS only), neuroscience electives and/or neuroscience-related electives can be fulfilled with the corresponding 6000-level NEUR courses. These 12 credits will also apply to the graduate program degree requirements in section 2a below. Please note that you **CANNOT** take more than 12 graduate credits as an undergraduate, so plan accordingly. Make sure to use the Dual Degree Program in Neuroscience 4000/6000-level Equivalencies List (Appendix A) to guide your choices when filling out the Graduate Course Plan Approval Form each semester. Also, please remember when planning your coursework that you **CANNOT** enroll in a 6000-level course for which you have already taken the 4000-level version. For example, taking a NEUR 4000 precludes one from taking NEUR 6000. Note that some courses are **ONLY** offered during one semester, so plan accordingly.

Graduate program degree requirements (36 credits)

- Students must earn a grade of "B" in all courses below to fulfill degree requirements
 1. Core course (1 credit)
 - a. NEUR 8600 Responsible Conduct in Research (1 credit; only available in Fall semester)
 2. Electives (26 credits)
 - a. 20 credits of NEUR core lab courses, NEUR or NEUR-related electives at the 6000-level
 - b. 6 credits of NEUR courses at the 8000-level, exclusive of research credits
 3. Non-thesis or Thesis Research (at least 9 credits)
 - a. NEUR 8800 (Master's Research) and/or NEUR 8810 (Directed Laboratory Study). Students should enroll in NEUR 8800/8810 concurrently
 - b. Required: either NEUR 8888 (Non-Thesis Research) or NEUR 8999 (Thesis Research) depending on track. Note that Thesis Research can only be taken after the student has been accepted into the Thesis Track (see below). **IMPORTANT**: if you are Thesis-track, you **MUST** take at least 6 credits of NEUR 8999 (Thesis Research) to graduate.

The student must complete either:

- a Non-Thesis Masters Capstone Project, the form of which is defined by the student's faculty mentor (a core or associate graduate faculty member of the Neuroscience Institute) and another graduate GSU faculty member of the

student's Master's Non-Thesis Committee. Notice of formation of the Master's Non-Thesis Committee must be filed with, and approved by, the Associate Director of Graduate Studies (Master's Non-Thesis Committee Selection form). The proposal for this project must be submitted for approval by the Associate Director of Graduate Studies using the Non-Thesis Masters Capstone Project Proposal Form (Appendix C). This must be submitted no later than one semester prior to the semester of graduation. The final approval of project completion is submitted online prior to the graduation audit: <https://cas.gsu.edu/academics-admissions/required-milestones/>.

OR

- A Thesis Proposal, Thesis (written) and Thesis Defense (oral)***.
 - a. Thesis Proposal
 - i. Master's Thesis Committee Selection: In consultation with the faculty mentor (a core or associate member of the Neuroscience Institute), the student will select at least two additional faculty members to serve on the student's Master's Thesis Committee, one of whom must be a core or associate member of the Neuroscience Institute. The formation of the Master's Thesis Committee must be filed and approved using the College of Arts and Sciences Graduate Services Office portal (Appointment of Master's Thesis Committee form: <https://cas.gsu.edu/academics-admissions/required-milestones/>). The student's committee should play an important role in the synthesis and development of the student's research topic.
 - ii. Proposal Format: The purpose of the proposal is to clearly formulate the specific aims of the proposed research in relation to a well-defined hypothesis. This may require multiple iterations between the student and committee until the Proposal is approved. The Thesis Proposal should be 4-5 pages double-spaced and consist of:
 1. Cover Page (not included in page limit)
 2. Abstract
 3. Introduction - providing the rationale or justification for the proposed experiments and concluding with the hypothesis being tested
 4. The Specific Aim(s) and Experimental Design
 5. Materials and Methods (brief)
 6. References (not included in page limit)
 - b. Oral Defense of Thesis Proposal: After provisional approval of the written Thesis Proposal by the committee, the student will orally defend the proposal in a meeting with the student's Master's Thesis Committee. The oral defense will consist of a brief presentation of the Thesis Proposal

followed by committee questions about the proposal and the relevant background material. If successful, this will be documented using the College of Arts and Sciences Graduate Services Office portal (Proposal Approval for Master's Thesis form: <https://cas.gsu.edu/academics-admissions/required-milestones/>). Upon successful completion of this step, the student is accepted into the Thesis Option and should use the above online portal to change status. If unsuccessful, the committee will decide further course of action.

- c. Thesis Preparation and Defense
 - i. Commencement of Thesis: Once the student's research is nearing completion (as judged by the faculty advisor), the student will begin preparation of the Thesis.
 - ii. Completion of Thesis: A copy of the Thesis that is approved by the faculty advisor will be provided to the other members of the Master's Thesis Committee at least four weeks prior to the Thesis Defense date.
 - iii. Request for Defense: After the Master's Thesis Committee has agreed that the Thesis is ready for defense, the student should provide to the graduate coordinator: a draft version of the Thesis, a single page Abstract, and a request for scheduling the Defense. This must be done at least two weeks prior to the requested defense date.
 - iv. Scheduling of Defense: The date of the defense will be determined by the student and the Thesis Committee. The graduate coordinator will schedule a room for the presentation and Defense and send out notice with the Abstract to NI faculty and students announcing the defense, at least one week before the scheduled event. A copy of the Thesis must be made available to the graduate faculty at this time for inspection.
- d. Thesis Defense: During the Defense, the faculty advisor will introduce and moderate the proceedings. The Defense will begin with an oral presentation (30-45 min) of the Thesis content by the student, followed by a general question and answer period. Subsequently, the student and Thesis Committee will meet to answer any remaining questions about the Thesis and/or presentation. The committee will then meet in private to vote on whether the student has successfully defended the Thesis (majority prevails). If successful, the student will file the signed Final Thesis Approval form with the graduate coordinator and this will be documented using the College of Arts and Sciences Graduate Services Office portal (Master's Thesis Approval form: <https://cas.gsu.edu/academics-admissions/required-milestones/>). The Thesis must also be published according to University guidelines.

***** Please note that, due to the numerous milestones, the Thesis Option should ONLY be used if the student has had extensive research experience in the faculty sponsor's lab during the undergraduate portion of the dual-degree program.**

Progress through the program

There are important milestones you must reach as you progress through the Dual Degree Program in Neuroscience.

Before your fourth year

- We highly recommend that you begin volunteering in a Neuroscience Institute lab as soon as possible. This is especially true if you plan on proposing and defending a Master's Thesis as part of your dual-degree program (see above). Please see the undergraduate program section of the Neuroscience Institute website for guidance on how to join a lab.
- Until your fourth year, you will follow the B.S. in Neuroscience degree requirements and be advised by the B.S. in Neuroscience advisors: <https://advisement.gsu.edu/>

In your fourth year

- Before the beginning of the first and second semesters of your fourth year, you must complete the [Graduate Course Plan Approval Form](#) to gain approval for taking courses during your senior year. You should do this in consultation with the Dual Degree Graduate Coordinator (Neuroscience).
- Apply to graduate at the appropriate time: <https://registrar.gsu.edu/graduation/>. At this time, you should start your application for the M.S. portion of the dual degree program (College of Arts & Sciences Graduate Program in Neuroscience). Please contact the Dual Degree Program (casdualdegree@gsu.edu) for assistance and guidance in initiating this process.
- Please note:
 - Dual Degree students can engage in a rolling admission process; thus, application dates/deadlines do not apply.
 - The GRE is not required for your graduate school application.
 - Your statement of purpose should include why you are interested in a Master's degree.
 - You need only submit two letters of recommendation.
 - One of these letters **must** be from your faculty research mentor in whose lab you plan to conduct research during your fifth year. You should direct this faculty member to explicitly state that you will be conducting your M.S. research in their lab. If the student is interested in the Master's Thesis track, the faculty research mentor should indicate if they support your entry the Master's Thesis track.
 - Your graduate school application fee will be waived.
- The Associate Director of Graduate Studies for the Neuroscience Institute (see the list of contacts above) will review your graduate school application.

In your fifth year

- Before the beginning of your fifth year, meet with your faculty research mentor to define the parameters of your Non-Thesis Masters Capstone Project or Master's Thesis. You should submit the appropriate paperwork (see above) at the beginning of the first semester in the Master's program
 - Please note: this the Non-Thesis Project usually takes the form of a research paper, literature review, poster presentation of your research, or an oral presentation of your research, but is not limited to these forms.

- The Master's Thesis track requires a Thesis Proposal, Thesis Proposal Defense, Thesis preparation and Thesis Defense (see above)
- To register for 8000-level courses, fill out the Neuroscience Institute Graduate Course Authorization Form (Appendix B), and submit the form to the Graduate Program Coordinator (see the list of contacts above).
- At any time during your fifth year (the earlier, the better) apply to graduate from the M.S. portion of your program. Contact the Dual Program in Neuroscience Advisor to initiate this process as well as the Associate Director of Graduate Studies (see the list of contacts above).
 - Please note that students must have earned at least a 3.0 GPA to graduate.
- After discussing the outcome of your Non-Thesis Project with your advisor, you must submit the online Non-Thesis Master's Capstone Project Approval form prior to the graduation audit: <https://cas.gsu.edu/academics-admissions/required-milestones>. For the Master's Thesis track, please see above.

Appendix A
Dual Degree Program in Neuroscience 4000/6000-level Equivalencies List

6000-level course	4000-level equivalent in Area G2/G3
NEUR 6000 Neuroscience Laboratory	NEUR 4000 Neuroscience Laboratory
NEUR 6001 Computational Neuroscience Laboratory	NEUR 4001 Computational Neuroscience Laboratory
NEUR 6002 Neurogenetics Laboratory	NEUR 4002 Neurogenetics Laboratory
NEUR 6010 Neurobiology	NEUR 4910 Topics in Neuroscience
NEUR 6015 Cellular and Molecular Neuroscience	NEUR 4010 Cellular and Molecular Neuroscience
NEUR 6020 Cognitive Neuroscience	NEUR 4020 Cognitive Neuroscience
NEUR 6040 Neuroethology	NEUR 4040 Neuroethology
NEUR 6050 Statistics for Neuroscience	NEUR 4050 Statistics for Neuroscience
NEUR 6060 Neurophysiology	NEUR 4060 Neurophysiology
NEUR 6070 Sensory Neuroscience	NEUR 4070 Sensory Neuroscience
NEUR 6080 Clinical Neuroscience	NEUR 4080 Clinical Neuroscience
NEUR 6100 Developmental Neurobiology	NEUR 4100 Developmental Neurobiology
NEUR 6110 Neural Plasticity	NEUR 4700 Neural Plasticity
NEUR 6115 Medical Neuroanatomy	NEUR 4115 Medical Neuroanatomy
NEUR 6150 Drugs and the Nervous System	NEUR 4150 Drugs and the Nervous System
NEUR 6200 Endocrinology	NEUR 4910 Topics in Neuroscience
NEUR 6250 Neuroscience of Memory	NEUR 4200 Neuroscience of Memory
NEUR 6251 Neuroscience of Motivation and Emotion	NEUR 4250 Neuroscience of Motivation and Emotion
NEUR 6320 Fundamentals of Bioinformatics	NEUR 4910 Topics in Neuroscience
NEUR 6330 Functional Neuroimaging	NEUR 4330 Functional Neuroimaging
NEUR 6340 Neurophysics	NEUR 4340 Neurophysics
NEUR 6360 Mathematical Biology	NEUR 4360 Mathematical Biology
NEUR 6370 Applied Dynamical Systems	NEUR 4370 Applied Dynamical Systems
NEUR 6420 Hormones and Behavior	NEUR 4420 Hormones and Behavior
NEUR 6576 Neurovirology	NEUR 4576 Neurovirology
NEUR 6910 Topics in Neuroscience	NEUR 4910 Topics in Neuroscience
NEUR 6970 Study Abroad in Neuroscience	NEUR 4970 Study Abroad in Neuroscience

Appendix B

Neuroscience Institute

Graduate Course Authorization Form

Date: _____ Semester/Year: _____

Student's Name: _____ ID#: _____

Instructions:

- **Students must complete this form each semester and get their advisor's signature.**
- **Enter all of your 8XXX-level courses.**
- **All students must register for NEUR 8800 and 8810 each semester.**
 - For every 3 hours you spend in the lab, you earn 1 credit in NEUR 8800.
 - You must register for these courses in the sections in which your advisor is the instructor of record.
 - If you need to reach 12 or 18 credits in a semester for financial aid or Graduate Teaching Assistantships (typically 15 credits in a semester), increase the number of credits in NEUR 8800 to meet your need (which means you will increase the hours you spend in the lab).
- **Submit this form to the Graduate Program Administrator's Office: PSC 808**

Course Number	CRN#	# Hours
NEUR 8800 (1-25 cr.)		
NEUR 8810 (2 cr.)		
	Total credit hours	

Student's Signature: _____

Date: _____

Advisor's Signature: _____

Date: _____

Received by: _____

Date: _____

Appendix C

Non-Thesis Masters Capstone Project Proposal Form

Project Title:

Project Description:

Student's name/signature:

Faculty research mentor name/signature:

Date Approved:

Director of the Dual B.S./M.S. Program in Neuroscience name/signature:

Date approved: