

Neuroscience Graduate Program



FLORIDA ATLANTIC UNIVERSITY

Stiles-Nicholson
Brain Institute

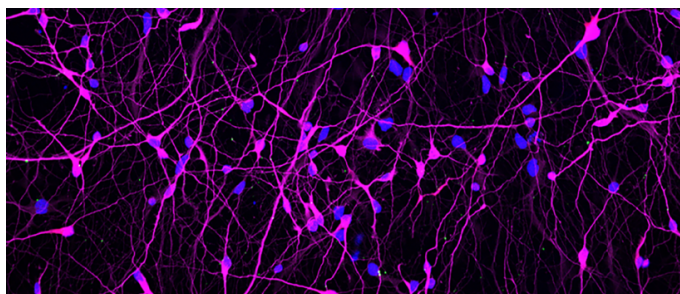
A GUIDE TO GRADUATE STUDY IN THE FAU NEUROSCIENCE GRADUATE PROGRAM



September 2023

Table of Contents

	<i>page</i>
<i>I. Graduate Program Overview.....</i>	<i>2</i>
<i>II. Program Administration.....</i>	<i>3</i>
<i>III. Degree Requirements.....</i>	<i>4</i>
<i>IV. Curriculum and Coursework Requirements.....</i>	<i>6</i>
<i>V. Penalties for Unsatisfactory Performance.....</i>	<i>8</i>
<i>VI. Program Milestones.....</i>	<i>10</i>
<i>Plan of Study.....</i>	<i>10</i>
<i>Supervisory/Dissertation Committee and Annual Meetings.....</i>	<i>10</i>
<i>Annual Individual Development Plan.....</i>	<i>11</i>
<i>Qualifying Exam and Advancement to Ph.D. Candidacy.....</i>	<i>12</i>
<i>Dissertation Defense.....</i>	<i>12</i>
<i>VII. Financial Support.....</i>	<i>14</i>
<i>VIII. Research Safety Compliance.....</i>	<i>14</i>
<i>IX. Graduate Teaching Assistantships.....</i>	<i>15</i>
<i>X. Graduate Student Organizations.....</i>	<i>15</i>
<i>XI. Support Services.....</i>	<i>16</i>
<i>XII. Community Education and Outreach.....</i>	<i>17</i>
<i>Appendix A: SFN Core Competencies for Ph.D. students.....</i>	<i>19</i>
<i>Appendix B: NGP Program Learning Outcomes.....</i>	<i>20</i>



GUIDE TO GRADUATE STUDY IN THE NGP (2024-25)

This handbook describes details of the FAU Neuroscience Graduate Program (NGP) and is meant to supplement FAU Graduate College policies and requirements for new and continuing graduate students. All students are responsible for adhering to Program, Graduate College, and University regulations, policies and procedures, and to FAU's Student Code of Conduct and Code of Academic Integrity. Please review the details on Graduate College requirements and policies at the FAU Graduate College website under the section "**Current Graduate Students**".

A detailed Graduate College Orientation Manual is available at

<https://www.fau.edu/graduate/documents/grad-student-orientation-manual.pdf>

The policies and requirements of the NGP are subject to change over time. Those that are in effect at the time a student joins the program will apply until degree completion.

I. FAU NGP OVERVIEW

The interdisciplinary FAU NGP is administered by the Stiles-Nicholson Brain Institute (SNBI), a university-wide organization with more than 70 participating faculty members engaged in neuroscience education and research, in association with the Charles E. Schmidt College of Science. The NGP is the academic component of the SNBI, which comprised the Neuroscience pillar identified in the 2015 FAU Strategic Plan as a target area for university development and investment in research and education. The NGP aims to equip students with the advanced conceptual, technical and reasoning skills needed to become the next generation of leading neuroscientists working in industry, academia and government. The program is organized around three major Areas of Research and Educational Emphasis that span the breadth of neuroscience inquiry: 1) Cellular, Molecular and Biomedical Neuroscience, 2) Sensorimotor, Cognitive and Behavioral Neuroscience and 3) Theoretical and Computational Neuroscience. Designation of these areas is meant to help guide student and faculty recruitment and to link students to courses typically associated with these areas. They are not meant to imply boundaries that cannot be crossed, either in research or choice of elective coursework. Often, the most important discoveries in neuroscience provide insights that link more than one, or even all, of these areas.

Breadth in research training in the program is achieved through the participation of neuroscience faculty from multiple Departments and Colleges across the campuses, as well as the engagement of faculty from the Max Planck Florida Institute for Neuroscience (MPFI). The training environment provides facilities that include the Advanced Imaging and Neurobehavior Cores, and the faculty-directed Centers for Neurodegeneration and Computational Neuroscience. Program faculty have expertise in a wide range of areas that include cellular-molecular neuroscience, cognitive and behavioral neuroscience, computational neuroscience, developmental neuroscience, systems neuroscience (auditory, speech, visual), learning, memory and synaptic plasticity, and translational and clinical neuroscience. Research is aimed at understanding both the fundamental mechanisms that underlie nervous system development, function and plasticity across lifespan, as well as those that support complex cognitive abilities, including language, decision-making, perception and emotion. Many faculty orient their research toward discovering the mechanisms that contribute to stroke, autism, chronic pain, epilepsy, depression, neurodegeneration and drug addiction, with the goal of advancing medical treatments. These diverse lines of inquiry give students the flexibility to tailor their research training to their own interests.

Students in the NGP are considered university employees, financially supported by the Stiles-Nicholson Brain Institute and the College of Science, both of whom provide funds to support Graduate Teaching Assistantships (**GTAs**). Graduate Research Assistantships (**GRAs**) are provided through faculty grants and individual fellowships obtained by trainees. Tuition costs are waived if students are continuously enrolled, supported on a GRA or GTA and in good standing,

however, fees are not covered. Continued financial support is contingent on students maintaining “**good standing**” both academically and in terms of satisfactory research progress.

II. PROGRAM ADMINISTRATION

The NGP is administered by the SNBI. The Executive Director, Dr. Randy Blakely, oversees all institute activities. The NGP Administrative Office is located on the FAU Boca Raton Campus and is overseen by Dr. Kate Guthrie, Assistant Director of the SNBI who serves as the Director of Education, and Ms. Linda Petersen, who serves as the Neuroscience Graduate Education Program Coordinator. Ms. Gala Pierce, whose office is on the FAU Jupiter campus, is the Institute’s Assistant Director of Administrative Operations, and assists with onboarding of students as new FAU employees, as well as the management of student financial support. Our Boca Raton office provides assistance to NGP students for registration, insurance enrollment, reimbursements, Plans of Study, and can answer most questions. We are here to help!

Every NGP student is individually responsible for meeting all deadlines and submitting all required forms and documentation to both the NGP Administrative Office/Program Coordinator and the Graduate College (Plans of Study forms, Annual Progress Reports etc.). Each student is also responsible for meeting all coursework requirements, and all academic deadlines for registration, Dissertation submission etc. All students **MUST** use their FAU email address as required by University policy. Only this email address will be used by our Program Office to contact students. **No texting.** Check your email daily. **Failure to respond to these emails in a timely manner may result in missed deadlines for registration, insurance enrollment, and submission of required forms. This can result in missed paychecks, insurance gaps, delayed reimbursements, and other issues.** Accordingly, it is strongly recommended that each student alert Ms. Petersen when they are away on vacation or set up an informative “**out of office**” response in their email in case immediate contact with a student is needed. **Communication is key!** FAU Mail, FAU Google drive, One Drive, Canvas etc. are accessible through the MyFAU online portal. This requires two-factor authorization using the FAU Duo mobile phone app.

Program Steering Committee

This Committee consists of 11 neuroscience faculty from multiple Colleges and Departments, and MPFI. The Neuroscience Student Organization President participates in Steering Committee meetings to bring a student perspective to all policy decisions or program development. The Committee is responsible for maintaining program operations according to Program By-Laws, overseeing the curriculum structure and degree requirements, reviewing student performance in the program, and approving student leaves of absence, provided the faculty Supervisor recommends the leave. The Deans of the College of Science and the Graduate College also must approve leaves of absence. Members of the Committee and the Program Director also approve requests for substitutions of required core classes and transfers of credits.

Recruitment Committee

The Committee is comprised of 9 neuroscience faculty representing the three major research focus areas. The Committee is charged with annually reviewing applications to the NGP. They select and interview invited applicants, and make acceptance decisions for program admission, after considering feedback from faculty interviewers and the NGP and SNBI Directors. Current students in the NGP are encouraged to participate in the recruitment process when asked, particularly when recruits are interviewing at FAU in person.

III. DEGREE REQUIREMENTS

The Doctor of Philosophy with Major in Neuroscience is a research-intensive degree requiring a minimum of 72 credits beyond the baccalaureate degree. The expected, normative time to degree completion is 5-6 years. Be aware that the extra financial support provided by the Brain Institute ends at the end of year 5. The specific degree requirements are:

1. Completion of three Neuroscience Ph.D. Lab Rotations, consisting of eight-week research internships in different laboratories during the Fall and Spring semesters of Year 1. Lab rotations are an essential part of interdisciplinary training and provide a breadth of research experiences prior to selecting a permanent dissertation advisor. Rotations are limited to year 1 only.
2. Acceptance into the laboratory of an approved program faculty member for dissertation research by the end of the spring semester of Year 1. Students select, by mutual agreement, a dissertation Supervisor based on their research area, style of lab management, and how they interact with their trainees. **Students who do not secure their Ph.D. Supervisor by the start of the summer semester in year 1 will be dismissed from the program.**
3. Completion of **21** core credits listed in Required Core Courses.
4. Completion of **9** elective credits from the courses listed in Elective Courses.
5. Completion of a minimum of **24** Dissertation credits.
6. The remaining **18** credits may include additional elective courses at the **5000-level** or above and Advanced Research credits that support the student's research plan, with approval of the student's Supervisor.
7. Achievement of a "B" or higher grade in all courses, with an overall minimum grade point average (GPA) of **3.0** maintained, is required to remain in "**good standing**". A grade of Satisfactory in all courses earning research credits (Lab rotations, Advanced Research, Dissertation) is also required. **A cumulative GPA of at least 3.0 is also required by the Graduate College and students below this average are ineligible for tuition waivers and GTAships.** Please review the **Graduate College Tuition Benefits Policy** online for details. Credits for classes in which a grade of C+ or lower is obtained will not be applied to the Neuroscience Ph.D. degree. If a student has been permitted to develop an Academic Progression Plan due to poor grades, courses with a grade of C+ or lower must be retaken to earn a higher grade. Such courses cannot be taken a third time.
8. With the exception of Neuroscience Seminar, Laboratory Rotations, Advanced Research, and Dissertation, no other core or elective courses can be taken with the option of Satisfactory/Unsatisfactory grading.
9. Enrollment in the Neuroscience Seminar series is required each fall and spring semester during the **entire time** students remain in the program. Starting in Year 2, the Seminar series is taken for 0 credit. Attendance is recorded. Students are required to attend a minimum of 6 of the 8 seminars scheduled during a semester and are encouraged to participate in Q&A sessions. A subset of students in the program will typically meet with the speaker during their visit, often over lunch, which can provide useful career networking opportunities with neuroscience researchers from around the country.

10. Satisfactory completion of a written and oral public defense of an original dissertation research proposal. This constitutes the qualifying examination for Advancement to Ph.D. candidacy.

This proposal is written in the style of an NIH or NSF predoctoral fellowship and is presented orally by the student to an audience. After the public defense, the student's Supervisory Committee will vote to pass, pass with conditions, or fail the student if not up to expected graduate performance level. If passed with conditions, students must satisfy all conditions within 3 months. Students must generate the proposal document themselves, but this should be reviewed by the faculty Supervisor and the Supervisory Committee before the oral presentation, with an opportunity for including suggested edits. Failing the qualifying exam will result in dismissal for the NGP.

11. Degree completion requires the writing and successful public defense of a Dissertation describing the context, approach, results and impact of the student's original dissertation research. The Dissertation Committee will score the defense as passed, passed with conditions, or failed if not up to expected graduate performance level. Passing requires a unanimous vote. If passed with conditions, students must satisfy all conditions within 3 months. Failing will lead to dismissal. Acceptable formats for the written Dissertation are provided by the Graduate College on their website.

12. Publishing and Presenting: Prior to degree completion, students are **required to publish as first author** on at least one peer-reviewed research paper that involves the research activities described in their dissertation proposal. A paper *in press* counts as a publication to meet this requirement. Deposit of a draft of the paper at a public archive prior to peer review (e.g., BioRxiv) does not count as a publication that meets this requirement. Public presentations of research posters or talks at scientific meetings, retreats, graduate symposia and other venues is expected and encouraged while in the program. The SNBI has funds to assist with scientific meeting costs for students presenting their work in poster or lecture format on a first-come, first-served basis.

While in the program, all NGP students are expected to perform the responsibilities of their GTAs and GRAs in a satisfactory, professional manner. There is no "master's along the way" in the Neuroscience Graduate Program, and no student can be enrolled in another graduate program while pursuing the NGP Neuroscience Ph.D. degree.

NGP students must maintain continuous enrollment for at least 1 credit every semester (fall, spring, summer) to be eligible for Brain Institute supplemental financial support. Eligibility for GRAs and GTAs in any semester also requires enrollment for at least 1 credit during that time.

Students who fail to maintain continuous enrollment may become ineligible to complete the Ph.D. degree according to Graduate College policies and may be subject to an administrative withdrawal from the University. Under exceptional circumstances, students can request a leave of absence from the NGP program of up to 1 year (3 semesters). This requires a recommendation from the faculty Supervisor, the Program Director, the Steering Committee, and the Dean of the College of Science. Final approval for a leave of absence is granted by the Graduate College. Students who wish to return after a leave of more than a year must reapply to the NGP program through the Graduate College.

IV. CURRICULUM and COURSEWORK REQUIREMENTS

Required Core courses:

Title	Code	credits	Semester
Brain Diseases: Mechanisms and Therapy	BMS 6736	3	Spring Year 1
Scientific Communication	BSC 6846	3	Spring Year 2
Neuroscience Seminar* (1 credit per semester in Year 1)	PSB 6920	2	Every Fall and Spring
Cellular and Molecular Neuroscience	PSB 6345	3	Fall Year 1
Systems and Integrative Neuroscience	PSB 6346	3	Spring Year 1
Neuroscience Ph.D. Laboratory Rotations (fall & spring of Year 1*)	PSB 6910L	4	Fall and Spring Year 1
Experimental Design**	PSY 6206	3 or	Fall Year 1 or 2
Computational Neuroscience 1†	ISC 6460	3	Fall Year 1 or 2
Total core credits		21	

*Neuroscience Seminar (PSB 6920) is taken in the fall and spring of Year 1 for 1 credit per semester. In later years, it is taken for 0 credit every fall and spring semester. **Attendance for all 5 years is mandatory.**

**Lab Rotations are evaluated as Satisfactory/Unsatisfactory by the supervising faculty member. Students will receive an evaluation form to provide our Office with feedback about their lab rotation experiences.

†Students may take EITHER Experimental Design 1 or Computational Neuroscience but need not take both.

Elective courses: Not all courses are taught every semester or every year. Some courses have prerequisites. Be aware that the list below is not exclusive and may change. New courses may be offered by new faculty, and established courses may be discontinued. **Approval of elective courses not on this list may be requested by contacting the Program Director.**

Choose at least three courses from the list		
Title	Code	Credits
Practical Cell Neuroscience	BSC 6417C	3
Advanced Molecular and Cellular Biology	PCB 5532	3
Neurobiological Signal Processing	ISC 6466	3
Introduction to Neural Networks	CAP 5615	3
Introduction to Data Science	CAP 5768	3
Foundations of Vision	CAP 6411	3

Data Mining for Bioinformatics	CAP 6546	3
Artificial Intelligence	CAP 6635	3
Data Mining and Machine Learning	CAP 6673	3
Biosignal Processing	EEE 5286	3
Seminar in Human Perception	EXP 6208	3
Seminar in Cognition	EXP 6609	3
Experimental Design 2	PSY 6207	3
Special Topics in Behavioral Neuroscience (such as Functional Neuroanatomy)	PSB 6930	3
Special Topics in Psych (such as the Neuroscience of Sleep)	PSY 6930	3
Neural Bases of Human Communication	SPA 5107	3
Special Topics in Cognition (such as Attention and Consciousness)	EXP 6930	3
Neural Plasticity	GMS 6021	3
Principles of Neuroimmunology	GMS 6708	3
Developmental Neurobiology	PSB 6515	3
Cognitive Neuroscience	ISC 5465	3
Methods in Complex Systems	ISC 6450	3
Computational Neuroscience 1	ISC 6460	3
Neurobiology of Addiction	PCB 5844	3
Advanced Cell Physiology	PCB 6207	3
Neurophysiology	PCB 6835C	3
Adult Neurogenesis	PCB 6848	3
Pharmacology	GMS 6513	3
Seminar in Behavioral Neuroscience	PSB 6058	3
Nonlinear Dynamical Systems	ISC 5453	3
Developmental Neuropsychology	PSB 6516	3
Adult Language Disorders	SPA 6410	3
Genetics of Communication Disorders	SPA 6438	3
Biostatistics	STA 5195	3
Bioinformatics-Biomedical Perspectives	BME 6762	3
Human Neuroanatomy	ZOO 6748	3
Total elective credits		9
Additional elective classes (5000 level or above) and Advanced Research (PSB7918)		18
Dissertation credits (minimum)	PSB 7980	24
Total		72

Students cannot exceed a total of 79 credits (normal credit number + 10%) during their time in the program and are strongly encouraged to register as soon as possible for high demand, required courses to ensure a seat in the class! Do not delay your registration.

Transfer of credits

Students with prior graduate education, such as the M.S. degree, may receive credit for up to 15 credit hours of comparable coursework, including up to 9 hrs of Core course credit, not to include Laboratory Rotations or Neuroscience Seminar. Credit is received only after review of the previous course grades (transcripts) and review of course syllabi describing the content of the courses taken. The decision to accept these prior credits toward the Neuroscience doctoral degree is made by the program Steering Committee, as well as the Graduate College. Students may not transfer any prior Independent Research/Study or Dissertation research credits earned during completion of the MA or MS degree.

Seminars and Journal Clubs

Students are required to attend biweekly Neuroscience Seminars and are encouraged to attend additional seminars sponsored by the Center for Molecular Biology and Biotechnology and Max Planck Florida when possible. Students are also encouraged to participate in departmental or theme-based Journal Clubs that meet regularly.

Graduate College Enrollment Options

Doctoral degree students who have advanced to candidacy, have completed all required coursework as listed on their approved Plan of Study and are only enrolled in dissertation credits may petition to be classified as full-time graduate students with an enrollment of at least 3 credits.

Those who have completed all coursework AND dissertation/dissertation credits as listed on their approved Plan of Study and are only enrolled to satisfy continuous enrollment requirements to complete their dissertation may petition to be classified as full-time graduate students with an enrollment of at least 1 credit.

All graduate students in their last semester of study, as verified by their approved Plan of Study, may petition to be classified as full-time graduate students with an enrollment of the remaining credits needed to complete their degree.

V. PENALTIES FOR UNSATISFACTORY ACADEMIC AND/OR RESEARCH PROGRESS

Students must meet all NGP program and University requirements and responsibilities to remain in **“good standing”**. To remain in good standing, each graduate student at Florida Atlantic University must maintain a satisfactory record. **A cumulative 3.0 GPA must be maintained for all courses listed on the Plan of Study. This is the minimum necessary for a graduate degree at Florida Atlantic University. Good standing indicates satisfactory academic and research performance, satisfactory performance in all GTA and GRA responsibilities, and fulfillment of all NGP program, Graduate College, and University requirements.**

For the NGP, satisfactory academic progress requires a cumulative GPA of at least 3.0, and a grade of B or better in all courses. A GPA of 3.0 is also required to be eligible for tuition waivers. GTAs are awarded by the Departments and Colleges on a competitive basis, and poor academic performance may result in ineligibility for a GTA. Grades of B-, C+, and C or lower are indicative of *unsatisfactory* work for graduate students. A course grade of C+ or lower will not be accepted by the NGP toward the doctoral degree. A consistently low GPA and poor grades can lead to academic dismissal from the program if the Supervising faculty member, Program Director, and Steering Committee Chair choose to recommend dismissal.

Alternatively, students that do not maintain a cumulative GPA of 3.0 may be given the option to devise an Academic Progression Plan (APP) as described by the Graduate College (see “*Additional Policies for Graduate Students*” on the Graduate College website). They will receive a letter from the Program Director that will serve as an academic warning, based on a low GPA, poor grades, or both. They then must meet with their faculty Supervisor, the NGP Director and Program Coordinator to develop the APP. The APP will detail the steps needed to bring the GPA and/or grades up to program requirements. For example, a course grade of C will not be accepted by the program and the APP may require a student to retake a course in which a C grade was received. Students will follow the academic improvement plan until all conditions in the plan have been met by a specified deadline. Those who succeed may remain in the program.

Students who fail to meet the requirements of the APP may be dismissed from the program. If there is sufficient evidence for academic dismissal, the Program Director will provide written notice to the student detailing the reasons for the dismissal, the availability of an appeals process, and indicate that the final decision rests with the Dean of the Graduate College. The Program Director also will offer to meet with the student (in person or remotely) to discuss the dismissal. A student has 10 academic days from the date of the written dismissal letter (provided by email) to respond to the Program Director. If the student accepts the dismissal or does not respond to the Director within that time, the NGP will forward all relevant information regarding the circumstances of the dismissal to the College of Science Associate Dean for Graduate Studies, who will review the material and forward it to the Dean of the Graduate College for review. The Graduate Dean will notify the student, the Program Director and the Dean of the College of Science of his/her final decision on the dismissal.

If, after meeting with the Program Director, the student wishes to appeal the dismissal, the student has 5 academic days from that meeting to submit an appeal request in writing to the College of Science Associate Dean for Graduate Studies. The Program Director will provide the Associate Dean with all necessary information and documentation regarding the dismissal recommendation. The Associate Dean will then appoint an appeal panel of NGP program faculty, a graduate student, and a College administrator. The panel will be provided with the information pertaining to the dismissal. The student will attend the appeal meeting to speak on his or her own behalf. The student may be accompanied by an advisor, but only the student may speak. The panel serves as an advisory body and will recommend to the Dean of the Graduate College either to uphold or void the dismissal. All documentation will be forwarded to the Dean who will inform all parties in writing of his/her final decision after reviewing the material.

Maintaining “good standing” also requires Satisfactory performance and progress in research responsibilities, as evaluated by the Ph.D. Supervisor, the student’s Supervisory/Dissertation Committee, and as documented in the annual Graduate Student Progress Report. The Ph.D. Supervisor can dismiss students from the lab at any time if their research performance is judged to be Unsatisfactory. A grade of Unsatisfactory in Lab Rotations (PSB 6910L), Advanced Research (PSB 7918) or Dissertation (PSB 7980) is a failing grade that will lead to dismissal from the program through the process described above. Failure to pass the Advancement to Candidacy/Qualifying exam or the Dissertation defense may also result in dismissal.

Dismissal also can be based on student behaviors or conduct that constitute violations of the University Student Code of Conduct (FAU Regulation 4.007) or the Code of Academic Integrity (FAU Regulation 4.0001). Details of these regulations are available at <https://www.fau.edu/regulations/chapter-4/> .Read these. Students are responsible for knowing what constitutes violations of these code regulations. Dismissal due to conduct violations is a different process from that described above and involves the FAU Dean of Students and a Student Conduct Board review and Hearing.

VI. PROGRAM MILESTONES

During the week prior to the start of the Fall semester, new students will meet each other and start their graduate training by attending two events. One is the day-long **Boot Camp**, consisting of faculty presentations that focus on modern technical approaches to neuroscience research, from how genetically modified model organisms are made, to high resolution cellular imaging and human brain EEG analyses. The second is an introductory **Orientation** that covers the basics of the Ph.D. program, including the curriculum and financial support. **The expected or “normative” time for Ph.D. degree completion is 5-6 years, and continuous 12-month enrollment is required. Be aware that the extra SNBI financial support ends at the end of the summer of year 5.** Students will need to progress through specific milestones to stay on track for timely degree completion. In late March of year 1, after completing 3 research rotations during the Fall and Spring, students will choose, by mutual agreement, their faculty Ph.D. Supervisor and the lab in which dissertation research will be performed. **This is the first milestone. Students who do not secure a faculty supervisor by the end of the spring semester in year 1 will be dismissed from the program.**

Milestone 2: End of Spring semester Year 1

Generate a Plan of Study (POS)

By **mid-May of Year 1**, after choosing their final research lab, all students must complete a **PLAN of STUDY** (POS, through the MyFAU portal). This will plan out the expected course work and research credits each student will need to complete to earn the 72 credits required for the degree. The Program Coordinator, Ms. Linda Petersen, will work with students to ensure the required courses and credits are included in the proposed plan. The POS will then go to the faculty supervisor for review and approval. When approved, it will go forward from our Office to the College of Science, and then to the Graduate College for final approval. **All students are required to have an approved POS on file with the FAU Graduate College in order to maintain full-time graduate status. The POS also is required for any student on a Graduate Research Assistantship or Graduate Teaching Assistantship to receive a tuition waiver, beginning in the summer semester of Year 1.** The POS can be modified as needed and is updated annually as each student progresses through the program.

Milestone 3: Spring/Summer semester Year 2

Select a Supervisory Committee

In consultation with their faculty mentor, a Supervisory Committee of 4 or more faculty is assembled by each student during the fall or spring of Year 2. At least 3 must be full time FAU tenured or tenure-track Graduate Faculty (including the Ph.D. Supervisor as Chair) who are NGP program faculty, are knowledgeable in aspects of the proposed research, and serve as voting members. The fourth may be a voting tenured or tenure-track FAU graduate faculty member of another, non-NGP graduate program. Students may include on their committee one affiliate faculty member from MPFI, with voting rights, in place of one of the 3 FAU faculty members, or in addition to the FAU faculty members. For a student conducting their dissertation work in a lab at MPFI, the advising MPFI faculty member will serve as the Committee Co-Chair. The Chair of the Committee must be a tenured or tenure-track, full time FAU Graduate Faculty member. Research-track faculty can be added as non-voting Committee members.

Students also may include one tenured or tenure-track graduate faculty-level member from another academic institution. If you plan to include a fourth faculty member from another university on your committee, contact the NGP Program Coordinator well in advance of your first committee

meeting and provide the name and contact information of this individual. The Program Coordinator will provide the student with the forms needed for FAU to approve them for temporary FAU Graduate Faculty status. The student will send these forms to the outside faculty member. The forms for approval include an updated CV, an Affiliate Appointment Personal Data sheet and checklist, a completed Form 1 (Graduate Faculty application), and a letter requesting appointment as FAU Affiliate Faculty with Graduate Faculty status. All these forms must be returned by the outside faculty member to the NGP Program Coordinator. The forms will then go to the College of Science Associate Dean for Graduate Studies and the Dean of Graduate College for approval. **This process will take significant time (weeks).** Please plan ahead.

The Supervisory Committee reviews each student's plan of study, their dissertation proposal, decides when they are ready for the advancement exam (and later the dissertation defense) and provides advice and support. The Committee will administer the Qualifying Exam required for advancement to Ph.D. candidacy.

Students are required to meet at least once with their full Committee before the end of the spring semester in year 2 and before their qualifying exam. Before the meetings, students will provide the faculty supervisor and Committee members with a description of their accomplishments thus far using the Student Progress Summary form.

The Chair, with input from the Committee members, will complete a Student Evaluation form after the meeting discussions, which will be submitted to the NGP Program Coordinator.

The Committee must meet at least once annually thereafter to review and report on student progress and evaluate performance. It is the student's responsibility to schedule the annual meetings. The NGP Program Coordinator will send out a reminder early in each spring semester to schedule Committee meetings before the end of the semester. More frequent meetings are encouraged.

*****The NGP requires at least one Student Progress Evaluation form be submitted to the Program Coordinator and Director annually beginning in the spring of year 2. *****

Students will provide their committee with an updated Progress Summary form before each meeting. Committee members can participate in meetings remotely via Zoom or other electronic platforms.

Milestone 4: Spring/Summer Year 2

Annual Individual Development Plan (IDP)

By the end of year 2, and every summer semester thereafter until graduation, students are required to work closely with their faculty mentor to create an annual Individual Development Plan (IDP), using a program form that will be provided. When completed, the IDP form must be submitted to the NGP Program Coordinator. The annual plan allows students to self-assess past accomplishments, their progress toward completing the degree in 5 years, and their long-term career goals. When considering those career goals, students can identify areas for growth or improvement such as acquiring new technical skills or scientific knowledge, honing communication skills, gaining teaching experience, or networking in the professional community. Strategic objectives for the following year can then be aimed at building competencies in these areas by planning to enroll in courses, present at scientific meetings, write papers or grants, or gain skills in specific research techniques. In this way, the annual IDP helps students make progress in completing their degree, while outlining a path to develop the professional skills needed to reach career goals. IDPs are also required information for NIH annual grant progress reports. All faculty investigators must include a section that describes how IDPs are used to

identify and promote the career goals of graduate students supported on their NIH grant awards. NIH predoctoral fellowship applications also are expected to indicate that a student applicant has created an IDP as part of their graduate training.

The Society for Neuroscience Training Committee has developed a list of Core Competencies that Ph.D. students are expected to gain during their training. To aid in designing the annual IDP, this list is included in **Appendix A** at the back of this handbook. **Appendix B**, which is based on those core competencies, is a list of learning outcomes that NGP students are expected to achieve by the end of their graduate training.

Milestone 5: Spring or summer Year 2/Fall Year 3

Qualifying Exam, Proposal Defense and Advancement to Ph.D. Candidacy

Students must advance to Ph.D. candidacy no later than the end of the fall semester of their third year. They must be in “Good Standing” and they must have completed RCR training.

In consultation with their Ph.D. Supervisor, students will prepare a written research proposal modeled on the NIH or NSF formats (or others as appropriate) used for predoctoral fellowship applications. The proposal must be submitted to their Supervisory Committee no less than 2 weeks prior to the oral qualifying exam. Students must notify the NGP Program Coordinator to confirm they have obtained Committee approval to schedule the exam and indicate the date so the event can be publicized. **Students also must provide the Program Coordinator with an updated Milestone checklist, a current CV, and Form 8 “Admission to Doctoral Candidacy”** (available on the Graduate College website).

The proposal will be targeted to the chosen area of research, provide background, identify research aims, and describe preliminary data, proposed experiments, and methods of data analyses. Students will present their proposal in an open forum advertised to the University community, followed by a closed oral exam consisting of questions from the student’s Supervisory Committee. Prior to the exam date, the Program Coordinator will provide the Ph.D. Supervisor and Committee members with the Advancement Evaluation form. After the proposal defense, Committee members will vote to either pass, pass with conditions, or fail the student. They will fill out the Advancement Evaluation form and the Chair will send this to the Program Coordinator. Passing requires a unanimous vote. If passed with conditions, the student must satisfy any conditions set by the Committee within three months. This allows for proposal editing and preparation for a second exam. Successful students will enroll for Dissertation research credits the semester after advancement. Students who fail the first or second time will be dismissed from the NGP program.

Students who successfully advance to Ph.D. candidacy are strongly encouraged to use their written proposals to develop a predoctoral fellowship application to submit to the NIH, NSF, or other external grant funding agencies in year 3. Passing the qualifying exam is seen by application reviewers as evidence of student success in their early doctoral training.

Milestone 6: Year 5

Doctoral Dissertation Defense and Graduation

Once a student has passed their advancement to candidacy, the Supervisory Committee becomes the Dissertation Committee, and will continue to mentor and guide the student in their dissertation work until completion of the Ph.D. degree. Students are encouraged to consult

frequently with their committee members as they progress in their research. Any changes in Committee membership must be reported to the Program Coordinator and Program Director.

Application for the Ph.D. degree must be made one semester BEFORE the semester of graduation and the student Plan of Study at the Graduate College at that time MUST match exactly the actual record of course completion and current enrollment. If not, the Graduate College will not approve graduation. It is the student's responsibility to adhere to all Graduate College required guidelines and Graduation Deadlines posted on their website for final Ph.D. degree approval.

The link is: (<https://www.fau.edu/graduate/degree-completion/deadlines/>).

Students who have advanced are required to meet with their Dissertation Committee at least once every spring semester to provide updates on their research progress. Meetings can be more frequent if needed. The Supervisor, in consultation with the Committee members, will submit the annual Student Progress Evaluation report to the NGP Program Coordinator and Program Director. Failure to hold annual Committee meetings will result in freezing student registration for additional dissertation credits. An updated student Progress Summary, comprised of highlights of research progress and professional activities (e.g., attendance at meetings, publications, presentations, outreach activities) must be provided to the Committee by the student at least one week prior to the meetings. Each student should provide a brief oral presentation/discussion of their research progress. This should include research results obtained and their significance, any changes in goals, experimental aims or design, problems encountered, and objectives for the next year (or other period). Students should take notes on feedback and suggestions made by the Committee members during discussion. The Chair and Committee will complete the Student Progress Evaluation report and submit this to the Program Coordinator and Program Director. More frequent meetings can be held if the faculty Supervisor and/or Committee deems this necessary.

The “*FAU Graduate Dissertation and Dissertation Guidelines*” can be downloaded from the Graduate College website as a pdf file. **The written dissertation, formatted according to the Guidelines, must be given to the Dissertation Committee members and the NGP Program Coordinator no less than 1 month before the oral defense date.** At least 2 weeks in advance of the defense the student MUST confirm with the Program Coordinator that the Supervisor and Committee have agreed the student is ready to defend and provide the defense date and time so it can be advertised to the university community. The defense must be accessible to interested individuals attending in person or remotely on the Davie, Boca Raton and Jupiter campuses. Following the public defense, Committee members will conduct a closed meeting and vote to pass, pass with conditions, or fail the student. Passing requires a unanimous Committee vote. Ad hoc members may not vote. If passed with conditions by a unanimous vote, students must satisfy the conditions imposed by the Committee within three months prior to resubmission of the dissertation, following the rules of the Graduate College. The conditions may include revision of the written dissertation and/or a second public defense. The Committee will then vote again to pass or fail the student.

When planning their dissertation defense, students should consider the time needed to find a position following the awarding of their doctoral degree. Those considering postdoctoral positions may need to identify a prospective mentor as much as a year in advance, particularly if interested in joining a high-profile laboratory. Dissertation Committees will encourage students to defend their dissertation on a 5-year timeline. Additional time may be spent working with the mentor or local collaborators in the form of a short, “bridging” postdoctoral position (if available) while the next job position is obtained. Support from the NGP is available for 5 years, and while this can be extended under special circumstances, it cannot be used to delay a career decision or to pursue

additional research beyond that needed to complete the dissertation. A stipend supplement after dissertation completion requires review and approval by the Program Director.

VII. FINANCIAL SUPPORT

All students in **good standing** are guaranteed 12 months of stipend support and stipend supplement, FAU Student Health Insurance for those who are GRAs and GTAs, and tuition coverage (up to a maximum of 9 credits per semester) for up to 5 years. In Year 1, the SNBI will provide the stipends for the Fall and Spring semesters while students are performing lab rotations. No student will need a GTA position during this time. The Graduate College will cover 75% of the cost of FAU Student Health Insurance annually, and the SNBI will cover the remaining 25% of the cost each academic year up to 5 years. Student fees are not covered and are the responsibility of the student. Out-of-state students will pay the same fee amount as in-state students. Before the end of the Spring semester in year 1, students will choose their faculty Supervisor and permanent lab. At the start of the first Summer semester, students will move to stipend support on a GTA or a GRA, with tuition benefits. If a GRA, the Supervisor will provide grant (or other) funds for stipend support during the semester. If a student is moving to GTA support, a request needs to be made in advance by the faculty Supervisor to the College of Science or the SNBI to secure a GTA position for the summer, and for the fall and spring semesters that follow if needed. Regardless of the type of stipend support, the SNBI will supplement funds to maintain the stipend amount at the level set at the beginning of year 1, for up to 5 years, as detailed in the program offer letter. For students that have resided in the state for over a year, there is a process for applying for Florida state residency should they choose to apply.

The SNBI also provides reimbursement for the cost of the annual Society for Neuroscience (SFN) student membership fee for those NGP students that join the FAU Neuroscience Student Organization (NSO). Student membership in the SFN qualifies the student for lower meeting registration costs and access to lower cost housing at the meeting. Graduate student SFN members that attend and present their work at the annual SFN meeting can apply to the SNBI for travel funds (up to \$500) to help offset the cost of attending the meeting. Other meetings more pertinent to the student's training also will be considered for support, but SFN membership should be pursued due to the professional opportunities this affords. Presenting graduate research work at scientific meetings is expected, helps to build networks in the scientific community and adds to a student's CV. SNBI also currently provides funds for graduate research fellowships in the areas of Neurodegeneration and Computational Neuroscience. Students are encouraged to apply for these competitive annual awards by submitting a research project proposal when they are announced.

The Graduate College also awards student fellowships and scholarships. These and other awards can be found at the Graduate College website under "Fellowships and Awards", with instructions on eligibility and when and how to apply.

VIII. RESEARCH SAFETY COMPLIANCE

All faculty, students, postdocs, and lab technicians/assistants involved in research work are required to adhere to federal and University requirements aimed at maximizing safety while conducting research. Before starting any research work, all students must complete the training modules required by FAU EH&S (online), as well as other modules accessed through the CITI Program (also online). All new NGP students are provided with the current list of required training courses before the Fall semester begins and are expected to be fully compliant before classes start, except for in-person training sessions for those who will work with vertebrate animals. Some courses are required by all, some are required for those doing work with specific hazards, and

some courses may not be needed, depending on the type of research work. The EH&S and the FAU Division of Research keep up to date training records for each student, and some courses are required to be retaken every year. EH&S and CITI will send students email notices when they need to update their training. **A student that has not met the minimum safety training requirements for their lab's type of research work is not permitted to perform research and is not eligible for a GRA.**

During Year 2, NGP students are **required** to attend in-person **“FAU Responsible Conduct of Research Workshops”**. This consists of 4-5 sessions during a semester. The schedule is announced by the Graduate College, which will contact students to invite them to register. **NGP students will not be eligible to Advance to PhD Candidacy until they have completed the RCR Workshop training.** The workshops cover ethics in human and animal research, conflicts of interest, authorship, data management, and research misconduct. RCR workshop training is required by all who do grant-funded research, including students financially supported on their advisor's grants. It also is necessary for graduate students who plan to submit a predoctoral fellowship application to external funding agencies, such as the NIH. These applications request the details of the RCR workshops attended by student applicants, including dates, topics covered, format, number of sessions etc. This takes up an entire page in the NIH predoctoral fellowship application.

IX. GRADUATE TEACHING ASSISTANTSHIPS

Prior to serving as a GTA, students are required to complete the online *“Graduate Teaching Assistantship Training”* modules provided by the Graduate College. **Training information and requirements will be emailed to all newly hired GTAs after add/drop of the first term of employment. Please check your FAU email regularly.** The Graduate College also offers an online *New Graduate Student Orientation* module that can be accessed through Canvas (via MyFAU) and shows up as a course on each student's Dashboard. In addition to the general training provided by the Graduate College, discipline specific GTA training may be required by the department in which a student teaches. Some of this training may be done in person. Please communicate with your department and TA supervisor for information on new hire paperwork and departmental specific training requirements and resources. GTAs are assigned on a competitive basis and students must maintain a minimum cumulative GPA of 3.0 to be eligible. GTA performance in teaching is evaluated by the departmental TA supervisors, or the faculty instructor for the courses taught. Unsatisfactory performance can lead to the loss of a GTAship and the associated stipend and tuition support.

Newly hired GTAs and for whom English is not the first language are required to complete the Seminar for International Teaching Assistants (SITA) during their first semester as a GTA. SITA modules can be completed online through Canvas. To register for SITA, please contact ISSS@fau.edu or call the International Student and Scholar Services Office at 561-297-3049. For more information about SITA, please visit: fau.edu/global/international/programs-events/international-assistants/

X. GRADUATE STUDENT ORGANIZATIONS

The SNBI sponsors the Neuroscience Student Organization (NSO), which includes graduate students pursuing neuroscience research across several different FAU graduate programs. The President of the NSO participates as a non-voting member of the NGP Steering Committee to provide student input and suggest changes in program policies. The NSO is an official Graduate Student Organization and as such qualifies for institutional funds to support program activities. The organization has regular meetings, selects officers, arranges social get-togethers, participates in campus events, and has the opportunity each year to invite a prominent, outside speaker of their choice to give a talk at the FAU Annual Neuroscience Retreat, which has been

held at Manatee Lagoon in West Palm Beach. There are talks given by graduate students as well as a luncheon, and a student poster session. Ph.D. students who join the NSO will be reimbursed by the SNBI for the cost of student membership in the Society for Neuroscience.

FAU has a Graduate and Professional Student Association (**GPSA**) which we encourage our students to join. The GPSA holds an annual **FAU Graduate Research Day**, during which students present talks or posters on their work, with prizes awarded. Most of the Colleges also hold their own Graduate Research Day. Students are encouraged to participate in these events. Presentations of graduate research work always look good on a student's CV and BioSketch.

XI. SUPPORT SERVICES

Professional Development

Professional development opportunities are available through the Graduate College, which sponsors *Graduate Student Career Workshops* that cover topics such as composing your CV or resume, how to write job applications, and how to search for academic and non-academic positions. The Society for Neuroscience offers a *Professional Development* website online at NEURONLINE that covers a range of topics. The FAU Office of Postdoctoral Affairs is a source of information on obtaining support for postdoctoral training and can help students network with existing postdocs who can provide helpful hints regarding interviewing for positions, job searches etc. Additionally, FAU has a partnership with the Association of College and University Educators (ACUE) which offers online courses and *Certificates in Effective College Instruction* for those interested in building teaching credentials. The FAU Provost's Office has information on how and when to apply.

Student Health Services (SHS)

The FAU SHS provides accredited medical care to registered students. There is a Student Health office/clinic on the Boca Raton, Jupiter and Davie campuses, each staffed by with licensed primary care physicians, nurse practitioners and registered nurses. They provide a range of services, including office visits, physical exams, immunizations, blood analysis, nutritional advice, health care education, some prescriptions, as well as dental and psychiatric services. They accept FAU Student Health Insurance. Go to their website to learn more and see their prices: <http://www.fau.edu/shs/>

Counseling and Psychological Services (CAPS) <https://www.fau.edu/counseling/>

CAPS provides confidential, individualized, and effective mental health services that allow students to improve and maintain their mental well-being and meet their educational, personal, emotional, and psychological goals. Students may seek services for a wide variety of concerns, spanning from stress, worry, adjustment challenges and relationship issues to acute and ongoing mental health conditions. Students are assessed and provided with recommendations according to their specific needs, whether this comes in the form of short-term individual or group therapy on campus, or an off-campus provider.

International Student Services (ISS) <https://www.fau.edu/global/international/>

The ISS works to enhance the successful academic, cultural and personal experience of international students studying at FAU. As part of the Center for Global Engagement, the ISS provides vital services and programs that provide support, advising and assistance concerning visas and related immigration issues. The Center's Intensive English Institute provides language

classes to international students who wish to improve their proficiency in spoken and written English.

Parking and Transportation Services

The cost of parking permits is included in fees. There are no physical tags for cars. Registration for parking is done online through FAU Parking and Transportation Services, using the car model, year, color, and license plate number. Parking attendants check all cars in parking lots electronically. The lots and “e-permits” are color coded. Student commuter lots in Boca are blue, students living in apartments on the Boca campus park in green lots. Commuter students park in blue lots in Jupiter. All meters are reserved for visitors. Red lots are for faculty and staff. A free intercampus shuttle bus equipped with Wi-Fi runs between the Boca Raton and Jupiter campuses Monday through Friday. The full schedule and the shuttle pick-up and drop off locations are available online at FAU Parking and Transportation. There is no shuttle on weekends.

Department of Campus Recreation

With campus recreation student membership, students have access to the campus recreation and fitness center across from the football stadium on the Boca Raton campus. The Rec Center has indoor basketball courts, lap and leisure pools, fitness/gym equipment, group fitness classes, yoga and pilates classes, cycling, weightlifting, and boxing. It is open from 6:00AM -11:00PM during the week, and 9:00AM-9:00PM on weekends. The Climbing Center wall is near the track and softball stadium, while outdoor tennis and basketball courts are located near the soccer stadium.

Dining Options

The Breezeway Food Court is opposite the Student Bookstore on the Boca Raton campus. It is located at the south end of the Breezeway covered walkway. It includes a Pizza Hut, Dunkin Donuts, Subway, Einstein Bros. Bagels, Pollo Tropical, Panda Express, Steak and Shake, Outakes to Go, and other dining choices. There is a Tacos al Carbon food truck next to the food court entrance, a Chic-fil-A next to the Wimberley Library, a barbershop just across from the food court, a PNC Bank ATM near the outside of the Bookstore and in the Student Union, and a Starbuck’s just around the corner from the south end of the Breezeway. There are several restaurants to choose from in Jupiter along Main Street in Abacoa, across from FAU buildings MC-17 and MC-19. These include Copacabana Cuban Cuisine, Tavern Pi Pizza, Bahama Buck’s Shaved Ice and Desserts, Poke ‘n Go, the Taco Shack, and Crux Coffee Roasters.

XII. COMMUNITY EDUCATION AND OUTREACH

The SNBI considers community outreach to be an integral part of the Institute’s mission. Graduate students are encouraged to participate in the many programs the Institute sponsors. The ASCEND program (Advancing Science-Community Engagement through Neuroscience Discovery) provides educational experiences for community middle schoolers via the participation of FAU undergraduates, graduate students and postdoctoral fellows, who may receive a stipend supplement and lab research funds for their contributions to this outreach program. The program includes NeuroExplorers, a semester long series of fun classes that allow local students to perform hands-on experiments, engage in brain-oriented virtual reality exercises, visit FAU neuroscience laboratories and graduate with a certificate. The Mobile Minds program coordinates with the Cox Science Center and Aquarium to deliver “brain science” educational experiences to school children in underserved areas, including Title I schools in Palm Beach and Broward

counties. Mobile Minds has two vans loaded with portable activity tables, 3D virtual reality goggles, and supplies to perform engaging and fun experiments in their classrooms.

With FAU faculty, the Brain Institute developed the ***Journey through the Human Brain Exhibit*** at the Cox Science Center and Aquarium in West Palm Beach. This consists of hands-on neuroscience exhibits where kids can operate a robotic arm, construct neural connections using an interactive smart touch-table, look at real human brain scans, observe neurons through a microscope, make play-doh brains, get a washable brain tattoo, and take a virtual full screen video dive through the brain, from the outside down to individual synapses. Each spring, FAU graduate students and faculty run the Brain Blast Day on a Saturday at the museum, manning two dozen different stations where kids can look through microscopes, make a Play-Doh brain, use an EEG cap, measure electrical impulses controlling their arm muscles, dress like a scientist, identify hidden objects by touch, get a washable brain tattoo and more. Students also are encouraged to participate in local community-organized charitable events such as the National Alliance for Mental Health (NAMI) walk and the Autism Speaks walk, among others. The SNBI organizes teams for these events, drawing students, postdocs, and faculty from partner Institutes and FAU Colleges, and all are encouraged to participate.

Appendix A: The Society for Neuroscience Training Committee list of Core Competencies predoctoral students are expected to gain during their graduate training:

1. Conceptual knowledge at a depth beyond the M.S. degree:

- Understand of the development, structure, and function of the nervous system.
- Understand the detailed biology and function of the cell types of the nervous system.
- Develop advanced, broad-based and cross-disciplinary knowledge in neuroscience.
- Demonstrate critical analytical and creative thinking skills.

2. Research Skill Development

- Acquire detailed knowledge and expertise within specific research areas of neuroscience.
- Be able to design scientifically testable hypotheses.
- Gain proficiency in analytical approaches to defining scientific questions.
- Be able to conduct independent and novel research that adds to the body of knowledge in neuroscience.
- Develop proficiency in experimental design and the use of scientific tools and modern techniques, including computer-based data handling and modeling.
- Be able to demonstrate proficiency in data analysis and interpretation.

3. Communication Skills

- Develop proficiency in scientific writing, speaking, and active listening.
- Specific writing skills: Be able to write scientific papers, grant applications, and career-related documents, including *curriculum vitae (CV)*, resumes, cover letters, and research statements. Be able to communicate in writing to diverse audiences, including scientific and non-expert readers.
- Speaking: Be able to present research to scientific and non-expert audiences at conferences and seminars, including posters, slide presentations, and formal talks.
- Be able to effectively teach science topics.
- Be able to prepare and present accurately, scientific data in figures, tables, and graphs.
- Gain proficiency in preparing for job interviews.

3. Rigorous And Responsible Conduct Of Research (RCR Training)

- Be able to design and execute scientifically rigorous experiments, including appropriate data analysis and interpretation.
- Understand:
 - Conflicts of interest — personal, professional, and financial.
 - Ethics and policies regarding human subjects and vertebrate animals in research.
 - Policies regarding safe laboratory practices.
 - Mentor-mentee responsibilities and relationships.
 - Research collaborations.
 - Peer review (grants, manuscripts etc).
 - Data acquisition, management, sharing, and ownership.
 - Research misconduct and research integrity, including understanding what constitutes plagiarism, and data falsification or manipulation.
 - Responsible authorship and publication.

Appendix B: Learning Outcomes for students in the Neuroscience Graduate Program

1. Ph.D. students in the Neuroscience Graduate Program (NGP) will gain a comprehensive understanding of the nervous system that encompasses neuroanatomy, neurochemistry, neurophysiology, neural development and plasticity, sensory and motor systems, cognition and behavior, and neurological disorders.
2. Students will understand how to apply their knowledge and experimental methodologies to address fundamental questions in the field of neuroscience.
3. Students will understand how to conduct impactful, independent research including:
 - a) how to formulate hypotheses
 - b) how to design and conduct rigorous experiments
 - c) how to apply modern technical methods to the collection, handling and storage of data.
4. Students will understand how to critically evaluate experimental data by applying quantitative scientific methodology. They will understand how to:
 - a) apply appropriate methods of statistical and computational analyses
 - b) address factors that can compromise the validity and reproducibility of experimental measures
 - c) interpret and accurately present results of data analyses.
5. NGP students will understand how to effectively organize, present and explain scientific research information, orally and in written form, to the scientific community and the public.
6. Students will understand how to critically appraise their own data, as well as assess the merits of the design, analyses, interpretations and conclusions of published research studies in the field.
7. Students will understand what constitutes ethical conduct of scientific research and the consequences of violating ethical standards.

