Graduate Handbook

Neuroscience and Cognitive Science Program
University of Maryland, College Park
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Table of Contents

SECTION ONE
Philosophy of Graduate Program................................................................. 4
Advisors........................................................................................................ 4
  Philosophy............................................................................................... 4
  Requirements......................................................................................... 4
  Duties....................................................................................................... 4
  Procedure for Changing Advisors.......................................................... 4
  Procedure for Advisor to Drop Student.................................................. 5
  Procedure for Lab Rotations................................................................. 5
Home Department..................................................................................... 5
Advisory and Evaluative Committees....................................................... 5
  Philosophy............................................................................................... 5
  Member Affiliations............................................................................... 6
Committee Meeting Schedule.................................................................. 6
  First Year Research Project................................................................. 6
  Oral Presentation of First Year Research Project.................................... 6
  Qualifying Examination Meeting #1..................................................... 6
  Qualifying Examination Meeting #2..................................................... 6
  Research Progress/ Dissertation Meetings........................................... 6
  Procedure for Changing Committee Composition................................ 6

SECTION TWO
PhD Degree................................................................................................ 7
  General Information............................................................................. 7
    Participation......................................................................................... 7
    Expected Time to Degree................................................................. 7
    Registration......................................................................................... 7
    Course Load......................................................................................... 7
    Teaching Experience........................................................................... 7
    External Funding Applications.......................................................... 7
    Completion of Forms........................................................................... 7
    Commencement................................................................................... 7
Course Requirements............................................................................... 8
  Core........................................................................................................ 8
  Supplemental......................................................................................... 8
  Dissertation Credits............................................................................. 8
  NACS Course List................................................................................ 8
Research Requirements........................................................................ 8
  First Year Research Project................................................................. 8
  Qualifying Examination....................................................................... 9
  Dissertation Proposal/Advancement to Candidacy.................................. 11
  Dissertation.......................................................................................... 12
  Dissertation Defense........................................................................... 13

SECTION THREE
MS Degree................................................................................................ 13
  Non-Thesis MS Degree........................................................................ 13
Requirements......................................................................................................................... 13
Coursework................................................................................................................................. 13
Research Project......................................................................................................................... 14
Written Report............................................................................................................................ 14
Oral Presentation......................................................................................................................... 14
Thesis MS Degree....................................................................................................................... 14
Requirements............................................................................................................................. 14
Coursework................................................................................................................................. 14
Thesis........................................................................................................................................ 14
Oral Defense............................................................................................................................... 14

SECTION FOUR
Administrative Procedures.......................................................................................................... 15
Philosophy.................................................................................................................................. 15
Administrative System.................................................................................................................. 15
Program Director......................................................................................................................... 15
Graduate Director......................................................................................................................... 15
Admissions Director.................................................................................................................... 15
Graduate Committee................................................................................................................... 15
Assistant Director......................................................................................................................... 15
Academic Problems.................................................................................................................... 16
Probation.................................................................................................................................... 16
Termination................................................................................................................................ 16
Resolving Disputes...................................................................................................................... 16
Leave of Absence......................................................................................................................... 17
Exceptions................................................................................................................................... 17
SECTION ONE

Philosophy of Graduate Program

The Neuroscience and Cognitive Science (NACS) Program strives to educate exceptional scientists whose interdisciplinary training will form the basis for significant scientific contributions. This is a research doctoral program designed on an apprenticeship model: students train to become professional scientists by doing independent research and participating in all aspects of the profession under the guidance of faculty.

Much of the benefit for students of the NACS program is the opportunity for daily interaction with other NACS students, postdocs, and faculty over a broad range of interests and experience. We expect all students to be contributing—and benefiting—members of this intellectual community.

NACS graduate student research should be based at the University of Maryland, College Park, or in external institutions under the guidance of NACS adjunct faculty.

Advisors

Philosophy

The graduate advisor is a mentor for all aspects of the scientific and professional education of the student. This implies frequent, substantive interaction with the student. The student is expected, through his/her scholarship, to contribute to the mission of the mentor’s laboratory, research group, and department. However, the philosophy of the NACS program is that the mentor serves the student, not vice versa.

Requirements

The advisor must be a Full Member of the Graduate Faculty at the University of Maryland, College Park and a NACS faculty member. If the advisor ceases to be a member of NACS but remains on the University of Maryland, College Park faculty after matriculation of the student, the student may remain in the NACS program as long as he/she continues to meet all the requirements of the program. If the advisor leaves the University of Maryland, College Park, and the student decides to remain in the NACS program, the student must choose a new advisor willing to accept all the duties listed below. The former advisor can serve as co-advisor or as a committee member, if appropriate.

Duties

The primary role of the advisor is as scientific mentor to the student. The advisor serves as chair of the student’s committee and tracks the student’s progress to insure that requirements of the program and of the student’s committee are completed in a timely manner. Frequent informal evaluation is highly desirable to detect and correct problems before they become major. This is largely the responsibility of the advisor. However, periodic research presentations by the students during informal NACS events can be very valuable and should be strongly encouraged.

Procedure for Changing Advisors

Students who enter the NACS program must have an advisor and home department already established. Typically, students remain with their advisor and home department throughout their graduate career. However, a student may change advisors at any time. Our experience indicates that this is best done well before the student takes the qualifying examination.

The student may make the change by discussing his/her wishes with both the former and proposed new advisor and submitting a written statement briefly stating the reason for the change to the Graduate Director. For instances in which the student wishes to sever ties with his/her advisor before a new advisor has been identified, the student may prefer to discuss his/her plans with the Graduate Director, who can convey the change to the former advisor.
If the student has not made arrangements for a new advisor, the Graduate Director will appoint an interim advisor for a period of no more than four months. It is the student’s responsibility to establish a working relationship with a formal advisor within this four-month period; failure to do so may result in the student’s dismissal from the program.

Approval by the Graduate Director is required for a change in advisor. If the Graduate Director is either the student’s old or new advisor, the Graduate Director should turn over the approval decision to the Graduate Committee. The Committee may require additional information from all parties involved. If the student wishes to challenge the decisions of the Graduate Director or the Graduate Committee about advisor assignment, he/she may address concerns to the NACS Program Director.

The new advisor must indicate to the Graduate Director in writing that he/she is willing to have the student in his/her laboratory or research group and will assume all of the responsibilities of the advisor detailed above and provide funding for the student.

At the point when both student and new advisor want to go forward, the NACS office will notify the Graduate Director of the new home department. After the Graduate Director of the new home department has been notified, the student will form a transition committee. The following three or four faculty will be on the transition committee:

- New advisor
- NACS Graduate Director
- Another faculty member who most likely will be on the student’s committee
- Possibly the old adviser or the NACS Program Director

**Procedure for Advisor to Drop Student**

An advisor may decide he or she no longer wishes to supervise a student. This can be accomplished by a written request to the Graduate Director who will consult with the Program Director. If the request is approved, the advisor will notify the student in writing one month prior to termination. The Graduate Director will then appoint an interim advisor and the student will have four months from termination to find a new advisor.

**Procedure for Lab Rotations**

NACS offers lab rotations to selected first year students who have a serious interest in the research programs of several different faculty. NACS does not require mandatory lab rotations.

Faculty and students who choose to participate in a lab rotation their first year must take responsibility for making satisfactory arrangements (i.e., sequence, length of time, etc.). This requires a serious discussion among agreement by the relevant faculty, followed by a letter documenting the arrangement and signed by the student and the relevant faculty. This letter is included in the student’s file.

It is important to note that the home department and primary advisor remain the same throughout the rotation year.

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**Home Department**

The NACS Program is made up of faculty from many departments. Since, it is not itself a department, each NACS graduate student must have a home department. This is the department in which the student’s advisor has his/her appointment.

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**Advisory and Evaluative Committees**

**Philosophy**

At each stage of graduate training and evaluation, a student will work closely with an advisor and a committee. Ideally, committee members will serve for the duration of the student’s entire time in the Program.
Member Affiliations
Committee members must normally be full-time NACS faculty at the University of Maryland, College Park. However, if it is of special advantage to the student, up to two members of the committee can be full-time faculty members of another academic institution or permanent research staff members at a recognized scientific research institution, such as the National Institutes of Health (NIH).

Committee Meeting Schedule
First Year Research Project
The committee is comprised of the student’s adviser, 2 additional NACS faculty (one outside of research area), and a senior NACS student. The committee helps the student plan curriculum, define research interests, and initiate a First Year Research Project. The committee meets twice in their first year. The first meeting must occur by the end of September. The second meeting must occur by the end of February.

As the committee begins to evaluate the student’s progress in the NACS Program, only the faculty members continue to serve. At a third meeting scheduled no later than the end of September of the student’s second year, the student will make an oral presentation of the First Year Research Project to the committee.

Qualifying Exam
Committee composition may grow as the student gets to know more faculty in the program and/or additional expertise is needed. The committee meets between February and April of the student’s second year (first meeting) to discuss the topic areas and scope of the qualifying exam. In this meeting reading lists and other issues may also be discussed.

After the student passes the written section of the exam, an oral examination meeting is scheduled, typically in October or November of the student’s third year (second meeting).

Dissertation Proposal Defense
The committee must grow to a minimum of four faculty members for the dissertation proposal. The committee will advise the student on the planning of dissertation research and will provide feedback on research design and pilot data collection and analysis. The dissertation proposal defense typically occurs by the end of the student’s fourth year.

Dissertation Defense
A Dean’s representative is added to the committee before the PhD defense is scheduled. The dissertation defense typically occurs by the end of the student’s fifth year.

Meeting Requirement
Students are required to meet with their committee every 12 months until graduation but may schedule more frequent meetings as needed.

Procedure for Changing Committee Composition
The student may change committee composition at any time. Courtesy and common sense dictate that the student must thoroughly discuss the proposed change with both the former and new members before notifying the NACS Office. The student should briefly state the reasons for the request when notifying the NACS office.
SECTION TWO

PhD Degree

General Information

Philosophy
A major strength of the NACS program is the broad, integrative training it offers graduate students. An important goal of the curriculum is to assure that all NACS students have a core body of knowledge covering the basic concepts across the full range of neuroscience and cognitive science. This must be balanced with a second goal: a doctorate in NACS is a research degree, and the best way to learn the skills and strategies of research is to be immersed in day-to-day laboratory or research group activities and an independent project. Thus, the program should impose the smallest number of required courses consistent with the sufficient breadth of training.

Participation
All NACS students are expected to participate regularly and actively in NACS activities including, but not limited to, NACS Retreat, NACS Research Day, NACS seminars, and other events. This expectation also applies to students who carry out their research at NIH or other off campus venues.

Expected Time to Degree
NACS students are expected to complete their PhD degree within 5 years.

Registration
Students must be registered in each semester until they graduate. Registration is the responsibility of the students until they advance to candidacy. After students have advanced to candidacy, the Registrar’s Office automatically registers students for 6 credits of NACS899 each fall and spring semester until the students graduate.

Course Load
The NACS office recommends that students take no more than 10 credits each semester, which is the number of credits of tuition remission that a student receives if the student has a full research or teaching assistantship appointment provided by UMD.

Teaching Experience
All NACS students are encouraged to teach for at least two semesters during their graduate career. This will normally be as a Graduate Teaching Assistant.

External Funding Applications
Students are expected to submit predoctoral grant or fellowship applications. The NACS program has a Grants Development Specialist who can help students prepare these applications.

Completion of Forms
The student is responsible for completing all required NACS annual committee meeting forms and report forms, and required Graduate School forms and applications, by their specified deadlines. Contact the NACS Assistant Director for additional information about the forms.

Commencement
NACS students typically participate in the commencement ceremony of their home department. Diplomas are mailed to the student after graduation. Degrees are awarded by the University in December, May, and August.

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Course Requirements

Core Courses
NACS 600 Ethics in Scientific Research
NACS 640 Foundational Readings (taken in the first semester)
Three of the following five courses (at least one course from each area):
  Cognitive Area
    NACS 642 Cognitive Neuroscience
    NACS 645 Cognitive Science
  Neuroscience Area
    NACS 641 Introduction Neurosciences
    NACS 643 Computational Neuroscience
    NACS 644 Cellular and Molecular Neuroscience
Students who have satisfactorily completed graduate courses with comparable content can be exempted from NACS 600, 641, 642, 643, 644, and 645 core course requirements with written permission of their committee and the Graduate Director. This includes students with prior training in neural, cognitive, and/or computational neuroscience and students entering the NACS Program with a Master’s degree in a related field.

Supplemental Courses
In addition to the core courses, NACS students must complete three courses (minimum of 9 credits) that are relevant to their program of research. These courses should be approved by the student’s committee. Credits from core courses beyond the three mandated will count toward the total of 9 credits. The student’s committee may require additional course work to remedy any areas of weakness in the student’s previous training.

Dissertation Credits
The Graduate School requires 12 credits of 899 dissertation research credits before graduation. Students must be registered for at least one credit during the semester they intend to graduate. IMPORTANT: This includes summer sessions. A student who intends to graduate in summer or winter term must be registered for 1 credit during that term.

NACS Course List
This is a list of NACS-related courses that are taught by NACS faculty. The list is emailed to NACS students and faculty each semester. A list of current NACS course offerings can be found on the NACS website.

Research Requirements

First Year Research Project
Overview
NACS students will engage in a research project in their first year that culminates in a written report and oral presentation to their committee members. The project selected must be one that can be conceived and completed within the first year. The project will provide an early opportunity for students to receive feedback on written and oral presentations of their work. It will help launch students in their careers as independent scientists.

Lab Rotations
Upon entering the Program, students performing rotations should consult with their advisors as to where the project is to be performed and are encouraged to engage in a project that links their work. Students doing lab rotations will do the write-up of the written project during the summer. The written project can be based on research done in either lab.

Committee Meetings
- Students are required to meet with their committee three times in their first year.
- The first meeting must occur by the end of September. The purpose of the first meeting is to have a
discussion among the committee on potential projects and the resources needed to accomplish them. It is expected that the student will then begin experimental work towards the first year research project by the end of October.

- The second meeting must occur by the end of February. The purpose of the second meeting is to review the progress that has been made on the research project, discuss the requirements for the written paper, and review the timeline. Two weeks before the scheduled February meeting, the student must submit a one-page written outline of the research project to the committee. The outline should include hypothesis, methods, and specific aims.
- The presentation of the research report will constitute a third meeting by the end of September of the student’s second year.

Written Project
- Projects may involve empirical or theoretical research, and the discipline-specific details are developed by the student, his/her adviser and input from the committee.
- The project must be submitted as a brief journal-style research report around 5-10 pages in length (not including references and figures).
- It is not intended that the project be exhaustive – a single repeatable experiment with controls would be sufficient. Solid negative results, control experiments or an original analysis of data collected by others may also be permissible, provided that the project elaborates on how those results lay the groundwork for future experiments by the student.
- The project should not be a literature review, but any references in the report may later become part of the student’s qualifying exam reading list. A copy of the final written report must be submitted to the NACS Office.

Oral Presentation
- An oral presentation to the student’s committee must be scheduled by the student by June 1 of the student’s first year. The actual oral presentation must take place before the end of September of the student’s second year.
- The written report must be submitted to the student’s committee two weeks before that date.

Evaluation and Grading
- The student’s adviser and committee will evaluate the written report and the oral presentation.
- Grading of the entire research project (written report and oral presentation) will occur at the oral presentation and will be as High Pass, Pass, Marginal Pass, or Fail. The student’s adviser and committee will complete a Report of First Year Research Project form at the oral presentation and submit the form to the NACS office.
- Students who receive a High Pass will be eligible for travel support from the program to present their research at a national conference.
- A grade of Fail will initiate a discussion between the program’s director, the graduate director, and the student’s committee as to whether the student should continue in the Program. The student can appeal the outcome of a grade of Fail to the Graduate Director.

Scientific Presentation
- Students are encouraged to present their work at a scientific conference or at a NACS event within the student’s second year.

Qualifying Examination
Function
- This examination serves two purposes: 1) to assure that the student has mastered the core material in neural, computational, and cognitive science expected of all NACS students; 2) to assure that the student has the specialized knowledge and skills that will be required for the successful development of a dissertation proposal.
Responsibilities

- The qualifying exam (QE) is an important milestone in a student's progress towards the PhD. For this reason it is essential that the adviser and committee be closely involved in the process.
- The Assistant Director distributes a copy of the qualifying exam guidelines to relevant students and advisers by Spring Break of the student’s second year of study, and notifies relevant individuals of the specific exam dates for the written section.
- The NACS Office maintains a record of the core reading list and the questions, answers, and grades for the written section for each student.
- NACS faculty members in each of the blocks of the exam prepare a core reading list of 15 items and submit this list to the Assistant Director. Any updates to the core reading list must be completed by Spring Break each year.
- The student adds supplemental readings to the core reading list for his/her own exam by the end of spring semester (in consultation with his/her committee), and raises any issues involving accommodations for learning disabilities well in advance of the exam. Students are expected to go beyond the reading lists as they prepare for the exam.
- In consultation with the adviser and committee, each student identifies the scope and focus of the exam subject matter, making sure that the QE emphasizes integration of the student’s area of research with key concepts covered in the NACS core curriculum.
- Committee members should collaborate to prepare questions that encourage critical thinking and, where practicable, design individual questions that cover more than one area of the curriculum or which apply broad concepts taught in NACS core courses to the student’s proposed research topic. Such questions should require a display of knowledge that is broader than that taught in any one NACS core course. It is strongly suggested that the committee members meet as a group to prepare the questions.
- Questions will include key concepts covered in three of the following areas: systems, cognitive neuroscience, computational neuroscience, cellular & molecular neuroscience, and cognitive science.
- The adviser, as chair of the committee, emails the questions to the Assistant Director two weeks in advance of the date of the written section. The adviser and committee grade all blocks of the written section. The adviser emails the student’s grades on the written section of the exam to the Assistant Director. The advisor and committee coordinate the oral section of the QE with the student.

Timetable

- All NACS core course requirements must be completed before the qualifying examination.
- Students and adviser and committee are sent a copy of the QE guidelines by Spring Break of the student’s second year.
- Students and committee finalize the reading list by the end of spring semester of the second year.
- Students take the written section of the QE on two days in late September of the third year of study in an on-campus location. Exceptions to this schedule may be granted in writing by the NACS Graduate Director only.
- Grading of the written section is completed within two weeks of the date of the written section.
- If a student must be retested on any portion of the written section, the retest must be taken by the end of the first month of the spring semester of the third year of study.
- The oral section of the QE is held within 4-6 weeks of the written section or retake of the written section, and in any case no later than Spring Break of the third year of study.

Reading List

- The reading list for the exam consists of the core list determined by the faculty in that area, and additional readings determined by the student in consultation with his/her committee.
- The core reading list should make up at least 50% of the student’s reading list. A combined list of 25 articles or chapters is suggested as a guideline for each block of the exam.

Format of Exam
The qualifying examination has both a written section and an oral section.

**Written Section**
- The written section of the QE has 4 blocks, completed over 2 days. The 4 blocks cover the student’s research area and key concepts covered in three of the following NACS core areas: Systems, Cognitive Neuroscience, Computational Neuroscience, Cellular and Molecular Neuroscience, and Cognitive Science.
- Students are allowed up to 4 hours for each block of the written section, e.g., 9am – 1pm, 2pm – 6pm. Students who arrive late will forfeit the time they miss; no extra time will be given. Answers submitted late (after 4 hours and 15 minutes) will not be accepted. Any special accommodations must be approved by the NACS Graduate Director.
- The written section is open-book and open-computer but not open-internet. For example, students may have access to the materials from their reading list and any notes that they might have prepared. In lieu of complicated policing procedures, students should sign the University’s Honor Pledge.
- The written section emphasizes depth and integration of material from the student’s research area and key concepts from the core curriculum, and questions should be designed accordingly. Although the number of questions is not mandated, it is recommended that students be asked to answer a small number of questions, with some choice in which questions are attempted, e.g., ‘Answer two of the following three questions’.

**Oral Section**
- The written section of the QE is followed by an oral section. The purpose of the oral section is to expand upon answers to questions in the written section.
- A student proceeds to the oral section only after achieving at least a “B” on all blocks of the written section.
- All committee members must be present at the oral section.
- The student should contact his/her adviser and committee to find out the best way to prepare for the oral section.

**Grading**
- Answers to all blocks of the written section are distributed by the Assistant Director to all members of a student’s committee. The committee, working together, will grade all questions within two weeks of the date of the written section.
- Grades are assigned to all blocks of the written section. Each block of the written section is graded according to a standardized letter system:
  - A - F without +/-
    - A = Level expected of a PhD working in the field
    - B = level expected of a PhD candidate
    - C = Level expected of a Masters Candidate
    - D = Level expected of an Undergraduate
    - F = unacceptable
- A student proceeds to the oral section of the QE only after achieving at least a “B” on all blocks of the written section.
- Any block on which the student does not receive a grade of “B” or higher must be retested. The retest must include new questions. Only one repeat of each block is allowed.
- Separate letter grades are not assigned to the oral section; if the student is successful on the oral section, then the entire Qualifying Exam is passed. If the student is not successful on the oral section, then the oral section can be retaken once. If the student is not successful on the retake of the oral section, then the entire Qualifying Exam is failed, and this is cause for the student to be terminated from the NACS program.

**Dissertation Proposal / Advancement to Candidacy**
Before the end of the student’s eighth semester, the student will defend his/her dissertation proposal at a meeting of his/her dissertation committee. The purpose of this meeting is to assure the following:
• the proposed research can lead to a dissertation that meets the requirements and standards for attaining a doctorate
• the project is feasible
• the student has designed experiments that answer the questions posed
• the student has sufficiently worked out the details of the proposed research
• the student has anticipated possible pitfalls
• the student is thoroughly ready to proceed with the project
• the student has sufficient knowledge in the field to competently interpret and discuss his/her research findings in a broader context

At this point the student must have an approved protocol for the IACUC for animal research, or the student must have the IRB protocol for human research.

While this is an official and required meeting, it is more significantly part of a continuing dialog between the student and the committee that should result in dissertation research of the highest possible quality.

Guidelines for the Written Proposal:
• must contain
  o specific aims
  o background and significance
  o preliminary data
  o research design and methods
  o literature cited
• typed and double-spaced with 1 inch margins
• at least 30 pages (not including literature cited)
• must be written solely by the student and may not be a reproduction of any other work completed or in progress.
• the student should submit the proposal to the committee two weeks prior to the scheduled oral defense.

The first page of the proposal must include the following:
• title of the proposal
• student’s name and advisor’s name
• date of submission
• signatures of both the student and the faculty advisor confirming the originality of the work.

The Oral Defense
• The format and detail of the oral defense of the proposal is at the discretion of the student’s advisor and committee.
• The oral defense will typically last about two hours.

After the student has passed the oral defense, the student should submit a pdf of the proposal to the NACS office.

Successful defense of the dissertation proposal is the formal requirement for advancement to candidacy. The outcome of this meeting should be reported in writing to the Graduate Director and to the Graduate School. Students should complete the application for advancement to candidacy form found on the Graduate School's website. **NOTE: If the student does not advance to candidacy by the end of the tenth semester, he/she must request a one-year time extension from the Graduate School by filling out a “Request for Time Extension” form available on the Graduate School’s website.**

**Dissertation**
The PhD must be the result of original, independent research; the dissertation is the report of that research. Students are encouraged to use their published papers in their dissertation. **Students should adhere to the Graduate School guidelines when writing and formatting the dissertation.**
Dissertation Defense
Graduate School regulations stipulate that the doctoral degree, including the dissertation defense, must be completed within four years after admission to candidacy or within nine years after matriculation, whichever is greater. Specific procedures for scheduling and administering the dissertation defense are given in the Graduate School Catalog on the Graduate School’s website.

The dissertation defense will consist of two parts:
- Part 1 will be a public presentation by the candidate on the main aspects of the research reported in the dissertation. This seminar must be advertised accordingly well beforehand. The seminar will normally take place immediately before the formal examination.
- Part 2 will be a formal examination of the candidate by the Dissertation Examination Committee. This part will be open only to the Dissertation Examination Committee and members of the Graduate Faculty. During Part 2, only members of the Dissertation Examination Committee will be permitted to ask questions.

The outcome of the dissertation defense will be determined by the student’s doctoral examination committee, and the results will be reported to the NACS Graduate Director and the Graduate School.

The NACS program requires one electronic copy of the dissertation. The Graduate School requires electronic submission of the dissertation; the on-line submission process is outlined at the Graduate’s School’s website.

SECTION THREE

MS Degree
The NACS program offers both an optional non-thesis MS degree and an optional thesis MS degree. Students who wish to earn one of the two MS degrees (non-thesis or thesis) in route to the PhD can apply for the MS degree. Students who, for one reason or another, need to leave the program before completing the doctorate can also apply for the non-thesis MS degree or the thesis MS degree.

Non-Thesis MS Degree
Requirements
The requirements for the non-thesis MS degree include a total of 31 credits (16 credits in core courses; 12 credits in elective courses; and 3 research credits), and the completion of a written Research Project, and an oral presentation of the Research Project.

Coursework
Students will take 3 credits of NACS 798 non-thesis research credits. The 28 credits in coursework must be in NACS or NACS-related areas, and of these, at least 20 must be at the 600 level and above, and no courses may be below the 400 level. Students must maintain a cumulative grade point average of 3.0.

All MS students must take the following two courses (4 credits):
- NACS640: Foundational Readings in Neuroscience and Cognitive Science (2 credits)
- NACS600: Ethics in Scientific Research (2 credits)

They must also take three of the following 4-credit NACS courses (12 credits). At least one course must be taken from each area.
- Cognitive Area
  - NACS642: Cognitive Neuroscience
  - NACS645: Cognitive Science
- Neuroscience Area
In addition, they must take 12 credits in elective courses approved by NACS and the student’s committee.

Research Project
Students are required to complete a research project. Projects may involve empirical or theoretical research, and the discipline-specific details are developed by the student, his/her advisor, and input from the committee.

Written Report
The research project includes a written report that must be submitted as a journal-style research or review paper around 20-25 pages in length (not including reference list and figures). The student’s adviser and committee will evaluate the written report. An electronic copy of the written report must be submitted to the NACS office.

Oral Presentation
Students are required to give an oral presentation of their research project. The student’s adviser and committee will evaluate the oral presentation and complete a Report of Research Project form at the oral presentation.

Thesis MS Degree

Requirements
The requirements for the thesis MS degree include a total of 31 credits (16 credits in core courses; 12 credits in elective courses; and 3 research credits), and the passing of an oral defense of an original thesis.

Coursework
Students will take 3 credits of NACS 799 thesis research credits. The 28 credits in coursework must be in NACS or NACS-related areas, and of these, at least 20 must be at the 600 level and above, and no courses may be below the 400 level. Students must maintain a cumulative grade point average of 3.0.

All MS students must take the following two courses (4 credits):
- NAC640: Foundational Readings in Neuroscience and Cognitive Science (2 credits)
- NAC600: Ethics in Scientific Research (2 credits)

They must also take three of the following 4-credit NACS courses (12 credits). At least one course must be taken from each area.
- Cognitive Area
  - NAC642: Cognitive Neuroscience
  - NAC645: Cognitive Science
- Neuroscience Area
  - NAC641: Introduction to Neuroscience
  - NAC643: Computational Neuroscience
  - NAC644: Cellular and Molecular Neuroscience

In addition, they must take 12 credits in elective courses approved by NACS and the student’s committee.

Thesis
Students must conduct an independent research study on a topic selected by the student and his/her committee, and write a formal research paper (thesis) describing this research study. At minimum, the thesis should be a manuscript organized in a style that is typical for a peer-reviewed journal within the student’s research area and should be of a quality and significance suitable for publication in such a journal. The thesis should be based on completed
experiments, including a complete description of the methodology used and results obtained, which may be more in-depth than typical journal publications. The thesis should also contain an expanded literature review and theoretical framework, as well as an expanded discussion relating these findings to the existing literature.

An electronic copy of the thesis must be submitted to the NACS office.

The thesis can be an extension of the first year project, with additional experimentation and write-up.

The dissertation can include the thesis project as part of the background research and be built upon it, but the dissertation would need to substantially expand this topic with multiple additional experiments.

**Oral Defense**
Students must pass an oral examination defending the thesis and covering all course material. Approval of the thesis and the defense is the responsibility of the student’s Examining Committee.

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**SECTION FOUR**

**Administrative Procedures**

**Philosophy**
The goal of the program administration is to facilitate all activities of the graduate program while insuring that all rules and regulations are followed. A certain amount of bureaucracy is necessary, but it should never interfere with the intellectual activities of the students and faculty. The administration should also continually work to improve the graduate program.

**Administrative System**

**Program Director**
The Program Director works with the Executive Committee to generate and evaluate proposals for changes and improvements in NACS Program policy.

**Graduate Director**
The Graduate Director advises in any problems concerning NACS students and works with the NACS leadership to improve the Graduate Program. In the summer of each year, the Graduate Director will review all NACS graduate students with the NACS Assistant Director. This provides further assurance that each student is making satisfactory progress and meeting necessary deadlines.

**Admissions Director**
The Admissions Director works with the Admissions Committee to evaluate applications and make recommendations for acceptance to the program. The Admissions Director works with the NACS Program Director in putting together offers of financial support for incoming NACS students.

**Graduate Committee**
The Graduate Committee rules on requests for leaves of absence, special exceptions to policies, issues of probation and termination of students not meeting program requirements, and other student issues.

**Assistant Director**
The administrative activities of the program are managed by the Assistant Director.
**Academic Problems**

**Probation**
Probation is a formal warning to the student that there are serious deficiencies in his/her performance. Failure to correct those deficiencies can lead to termination from the program.

A student will be put on probation when one or more of the following events occur:
- the student fails to maintain a cumulative grade point average of 3.0 (required by Graduate School)
- the student fails to meet the deadline for completing the qualifying examination or dissertation proposal defense
- the student’s committee recommends probation because of a pattern of performance below the accepted standard for the NACS program. In this case, the committee must submit a written report detailing and documenting the problems to the Graduate Committee, and the Graduate Committee will determine if probation is warranted.

When placed on probation, the student will be informed in writing of the requirements for being removed from probation and the deadline by which those requirements must be met.

A student will be removed from probation when performance in courses improves to meet Graduate School requirements, or the Graduate Committee determines, based on reports from the student’s committee and advisor, that the student has satisfactorily corrected the deficiencies that resulted in probation.

**Termination Procedure**
- The Graduate School will terminate the admission status of any student whose cumulative grade point average falls below 3.0 for three consecutive semesters of enrollment.
- The decision to terminate a student from the program for any other reasons must be made by the Graduate Committee after careful consideration of the circumstances and all pertinent information.

**Grounds for Termination**
- A student who has been placed on probation and fails to meet the requirements for removal from probation by the stated deadline will be terminated from the NACS program.
- A student who fails the qualifying examination and is not granted a reexamination will be terminated from the PhD program.
- A student who fails the qualifying examination and also fails a re-examination will be terminated from the PhD program.
- The student is responsible for finding an advisor. The University is not responsible for providing an advisor. A student who does not have an advisor (other than an interim advisor) for more than four consecutive months will receive a warning that he/she will be terminated from the program if he/she does not have an advisor in the following two months. Thus, if a student goes without an advisor for a period of six consecutive months, he/she will be terminated from the NACS program.
- A student who has not completed the dissertation defense by the deadline established by the Graduate School will be terminated from the NACS program.
- A student who has violated accepted scientific ethical standards will be terminated from the NACS program.

**Resolving Disputes**
Every effort should be made to handle disputes between the student and his/her advisor or between the student and his/her committee informally. Students who have a grievance against their advisor that cannot be settled through direct discussion and/or negotiation with the advisor should consult the Graduate Director.

If all reasonable attempts at informal resolution fail, the parties involved should present their cases in writing to the Graduate Director who will take the issue to the Graduate Committee for consideration. In difficult cases, the student,
the advisor, or the Graduate Director may choose to ask for the assistance of the Ombuds Officer for Graduate Students for mediation or take other action.

**Leave of Absence**
Requests for a leave of absence should include an explanation, the date of anticipated return to registration, and a letter of support from the advisor. Decisions on granting leaves are made by the Graduate Director.

A leave of absence may not be for longer than one year. The student may, however, submit a second request that will be considered by the Graduate Director. The Graduate Director may then petition the Graduate School for an extension for a student who has had a leave of absence.

A leave of absence ‘stops the clock’ with respect to NACS graduate program deadlines. When the student returns to enrollment, the clock resumes where it stopped. The clock for some Graduate School deadlines does not stop with a leave of absence. Failure to comply with such deadlines may necessitate reapplication for admission to the Graduate School.

**Exceptions**
Unusual circumstances may arise that are not explicitly covered by the rules and regulations or that warrant exceptions to the rules. We intend the system to be flexible enough to accommodate any situation as long as the spirit of the regulations, the well-being of the student, and the standards of NACS are not compromised.

A request for a special exception, including an explanation and justification, should be made in writing to the Graduate Director. The request should include a letter of support from the advisor. The Graduate Director will review the request and decide if an exception will be granted.

A separate written request and a review by the Graduate Committee is required for each exception, even if the situation is identical to an earlier one for which an exception was granted.

An exception applies to a single student in a single situation and does not imply that other students will automatically be granted the same exception.

The fact that an exception has been granted does not change rules or regulations.

Multiple requests for exceptions by an individual student (for instance, more than one request to extend the deadline for the qualifying examination) are likely to indicate serious academic problems that need to be addressed by the student and his/her advisor.