

Graduate Program in Behavioral Neuroscience

Requirements for the Ph.D. Degree

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1. Brief Overview

The general requirements for the Ph.D. degree in Behavioral Neuroscience are briefly summarized in this section. More detailed information can be found in later sections of this document, in the [By-Laws](#) of the Graduate Council of the School of Medicine, and in the School of Medicine Graduate Catalog.

- *Required Coursework:* Students complete most of their required coursework during the first 2 years. Thereafter, the majority of the time is spent conducting research under the supervision of a faculty mentor.
- *Research Rotations:* Most new students will complete a series of laboratory research rotations during their first year and then choose a faculty mentor.
- *Research Paper Requirements:* All students must fulfill a research paper requirement by the end of the second year (i.e., before the first day of class for fall term of the third year). Completion of a M.S. thesis (including Graduate Council examination) may be used to meet this requirement.
- *Qualifying Examination:* All students must pass a written qualifying examination to advance to candidacy for the Ph.D. by the end of fall term of the third year of training.
- *Ph.D. Proposal:* A written Ph.D. Research Proposal must be submitted by the student and approved by the departmental Dissertation Advisory Committee by the end of the third year.
- *Ph.D. Dissertation and Oral Examination:* All students must complete a Ph.D. dissertation and pass the Graduate Council Oral Examination. It is generally expected that students will complete this requirement by the end of the 4th or 5th year of training.
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2. Curriculum/Required Coursework

Students are required to earn a minimum of 135 graduate-level term-hour credits. At least 100 hours must represent credit hours earned in the Department of Behavioral Neuroscience (hours labeled BEHN). Information on specific course requirements is provided below. In accord with Graduate Council requirements, all students must complete a 2-credit course in scientific ethics (CONJ 650). Remaining credit hours are elective. Graduate credit is granted only for coursework in which an A, A-, B+, B, B-, C+, C, C- or P (Pass) grade is received. Students are required to maintain a minimum GPA of 3.0 in graduate-level work. Descriptions of departmental courses are listed with the current [Course Schedule](#).

2.1 Course Requirements

Two specialized training tracks are available to the graduate student within the Behavioral Neuroscience graduate training program; one in Behavioral Neuroscience and the other in Behavioral Genomics. These tracks capitalize on the strengths of our faculty.

The following coursework (described in more detail below) is required for the two tracks.

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Behavioral Neuroscience Track	Behavioral Genomics Track
Scientific Ethics Statistics/Research Design Behavioral Neuroscience <i>Learning & Conditioning</i> Neurobiology of Disease Seminar - Issues in Behav Neurosci 12 hr Basic Science 9 hr Behavioral Neuroscience Electives	Scientific Ethics Statistics/Research Design Behavioral Neuroscience <i>Behavioral Genetics</i> Neurobiology of Disease Seminar - Issues in Behav Neurosci 12 hr Basic Science 9 hr Behavioral Neuroscience Electives

Specific course work will be tailored to the interests of the student completing a degree in one of these tracks. For example a student in the Behavioral Genomics Track, might be advised to take MGEN 612: *Population Genetics*, BEHN 619: *Molecular Strategies in Behavioral Research*, and MGEN 622: *Introduction to Eukaryotic Genetics*. A student in the Behavioral Neuroscience Track might be advised to take NEUS 627: *Systems Neuroscience*, and BEHN 616: *Current Topics in Neurobiology of Learning and Memory*. Regardless of the track selected by the student, the student will have input into the courses completed and will have access to all offered courses.

2.1.1. Behavioral Neuroscience and Behavioral Genomics Core

All students must complete a core curriculum that consists of the following courses:

CONJ 650: The Practice and Ethics of Science - 2 hrs (**required to be completed in the first year**)

BEHN 612: Statistics - 3 hrs

AND

BEHN 613: Advanced Statistics - 4 hrs (**both tracks**)

BEHN 615: Learning & Conditioning - 4 hrs (**Behavioral Neuroscience Track**)

OR

BEHN 625: Behavioral Genetics - 3 hrs (**Behavioral Genomics Track**)

BEHN 618: Behavioral Neuroscience - 3 hrs (**both tracks**)

NEUS 6xx Neurobiology of Disease - 3 hrs (**both tracks**)

(NEUS 6xx, Neurobiology of Disease may be applied toward 3 credit hours of the Basic Science Core Requirement or 3 credit hours of the Behavioral Neuroscience Elective Requirement - See 2.1.2. and 2.1.3. below.)

Students typically complete these courses during the first or second year. Letter grades (A, A-, B+, B, B-, C+, C, C-, D+, D, F) are assigned in all of these courses.

2.1.2. Basic Science Core

All students must complete a core curriculum in basic science that consists of at least 12 credit hours from non-BEHN courses (e.g., courses with prefixes: CELL, CONJ, MGEN, NEUS, PHPH or some others; see [Sample Curriculum](#) for suggested courses). New students should discuss their plan for completing this

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requirement with the Graduate Program Coordinator and their first year advisor. Proposed courses to complete this requirement must be approved by the Graduate Program Coordinator. Reading & Conference (course number 605) hours, Departmental Seminar, and Journal Club courses will not be accepted in fulfillment of this requirement.

Students typically complete the Basic Science core courses during the first or second year. Letter grades (A, A-, B+, B, B-, C+, C, C-, D+, D, F) are assigned in all of these courses.

2.1.3. *Behavioral Neuroscience Electives*

All students must also complete a minimum of nine (9) additional credit hours of advanced elective courses in behavioral neuroscience. Reading & Conference (BEHN 605) hours cannot be used to meet this requirement. Available courses include, but are not limited to the following:

* BEHN 615: Learning & Conditioning (4 hrs)

BEHN 616: Current Topics in Neurobiology of Learning & Memory

BEHN 617: Neurochemical Substrates of Addiction (3 hrs)

BEHN 619: Molecular Strategies in Behavioral Research (3 hrs) [Pre-requisite: Undergraduate Biochemistry and/or Cell Biology recommended]

*BEHN 625: Behavioral Genetics (3 hrs)

BEHN 626: Behavioral Psychopharmacology (3 hrs)

** NEUS 6xx Neurobiology of Disease (3 hrs)

* These courses are required for students in one or the other track, however, students in either track can register for the non-required course as an elective.

** Although not a BEHN course, this course is required and will be accepted as a Behavioral Neuroscience elective OR can be applied toward the basic science core.

Students typically complete these courses during the second or third year. First-year students may enroll with the permission of their faculty advisor and the course director. Letter grades (A, A-, B+, B, B-, C+, C, C-, D+, D, F) are assigned in all of these courses/seminar.

2.1.4. *Departmental Seminar*

All students must register for and participate in the weekly graduate seminar, BEHN 607: Seminar in Behavioral Neuroscience (1 hr), during all terms (except summer) until they have completed the Ph.D. degree. Ph.D. candidates may be allowed to register as an "audit" during the term in which they defend their dissertation with the permission of the Graduate Program Coordinator. Ph.D. Candidates who intend to defend their dissertation during Summer term may request to audit Spring term. Letter grades (A, A-, B+, B, B-, C+, C, C-, D+, D, F) are assigned for this seminar. The department faculty has established [General Guidelines for the BEHN 607 Seminar](#).

2.1.5. *Research*

All students with a full-time course load must register for a minimum of 2 credit hours for Research (BEHN 601) or Thesis (BEHN 503/603) during all terms until they have completed all requirements for the Ph.D. degree. First-year students usually participate in research rotations with different faculty members (see Section 4). During subsequent years, students spend the majority of their time in research under the supervision of their faculty mentor. Thus, Research/Thesis hours constitute a majority of the credit hours earned toward the Ph.D. degree.

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Instructors for Research or Thesis credit must be members of the graduate faculty and have a faculty appointment in the Department of Behavioral Neuroscience. The Thesis course number is typically used only in the term in which the student is expected to take the Oral Thesis Examination. Students who register for research or thesis credits must spend at least 3 hours in the laboratory each week of the term for each credit hour received. Participation in Research or Thesis is evaluated on a Pass/No Pass basis and is not included in the calculation of cumulative grade point average.

2.2. Course Load

Students plan their course load in consultation with the faculty advisor and/or the Graduate Program Coordinator; one of these individuals must approve the student's course registration plan each term. All students are expected to register for a full-time course load during each of the four quarters each year. A normal course load is 12-16 credit hours per term. In addition to Seminar (BEHN 607) and Research (BEHN 601), first and second year students are generally expected to register for at least two lecture/seminar courses during all but summer term. A [Sample Curriculum](#) for the first 3 years is provided.

2.3. Transfer Credits/Requirement Waivers

In accord with the Graduate Council [By-Laws](#), students may petition for transfer of graduate credit from another accredited institution toward completion of degree requirements in the Department of Behavioral Neuroscience. Only credit from formal didactic courses (not research or independent study) completed within the last 7 years in which the student earned a grade of A or B can be considered. Students must submit their petition (including official transcripts) within the first year after matriculation and the total number of transfer hours cannot exceed 45. In general, transfer credits will be applied toward elective requirements. All petitions for transfer of graduate credit must be submitted to the Graduate Program Coordinator who will present the petition for approval at the next scheduled faculty meeting. Approved petitions will then be forwarded by the Department Chair for final consideration by the Graduate Council. Requests for waiver of specific didactic course requirements must be approved by the Director of the equivalent OHSU course and by the Graduate Program Coordinator.

2.4. Course Schedule

The Graduate Program Coordinator is responsible for preparing the departmental course schedule for the following year (beginning with fall term) by July 15th. The proposed schedule must be forwarded to the Department Chair for approval prior to submission to the Registrar and Associate Dean for Graduate Studies. In preparing the schedule, consideration will be given to offering required and advanced elective courses at intervals that allow students to meet program requirements in a timely manner.

2.5. Grading Policy/Standards

Superior academic performance is expected of every graduate student in the Department of Behavioral Neuroscience. The grading system and overall standards of performance are specified in the Graduate Council [By-Laws](#). Graduate credit is granted only for course work in which grades of A, A-, B+, B, B-, C+, C, or C- are earned and for the grade P. Students must maintain a cumulative grade point average of 3.0 or higher. A student whose cumulative grade point average falls below 3.0 will immediately be placed on academic probation. A student placed on academic probation because of grades must obtain a cumulative grade point average of at least 3.0 within one academic term. A student that fails to do so may be recommended for dismissal for inadequate scholarship. The faculty may choose to allow a student up to four academic terms to correct deficiencies that resulted in academic probation. Probationary students

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who fail to achieve a cumulative grade point average of 3.0 within four terms shall be recommended for dismissal for the graduate program for inadequate scholarship. A student will be removed from probation as soon as his/her cumulative grade point average is raised to 3.0 or above.

In addition, a student who receives a non-passing grade (i.e., a letter grade below C- or a grade of NP) in any course will be immediately placed on academic probation, even if the student's cumulative grade point average does not fall below 3.0. Contingencies for removal from probation will be determined by the faculty in consultation with the student's mentor and the graduate program coordinator. A student whose cumulative grade point average falls below 3.0 after receiving a non-passing grade, or who receives a second non-passing course grade may be recommended for dismissal from the graduate program for inadequate scholarship.

A student on academic probation shall not be permitted to take the written qualifying examination or oral thesis examination nor may the student receive the M.S. or Ph.D. degree.

The Graduate Program Coordinator will review each student's transcript at the end of each term and notify the student in writing of deficiencies in academic performance. This notification will specify in what way(s) the student is failing to meet standards and specify time limits for correcting the deficiencies. A copy of the notification will be placed in the student's department file and will be sent to the student's faculty advisor and to the Department Chair.

3. First-Year Faculty Advisor

In consultation with the faculty and Department Chair, the Graduate Program Coordinator will assign a first-year faculty advisor to each new student. The faculty advisor will meet regularly with the student (at least 2-3 times per quarter) to discuss coursework, academic performance and research opportunities, to sign the course registration form and otherwise to help and advise the student during the first year. Students are strongly encouraged to use their faculty advisor as a resource and sounding board. The Graduate Program Coordinator serves as an informal Co-Advisor for all first-year students.

4. Research Rotations

New graduate students are generally expected to participate in a sequence of research rotations during their first year. These rotations involved spending a certain amount of time engaged in research in the laboratory of a member of the Behavioral Neuroscience faculty during each academic term. The intent is to give new graduate students an opportunity to learn more about the various research opportunities available in our program before making a commitment to a particular lab for the Ph.D. They also provide an opportunity for students to interact closely with several different faculty members in a setting other than the classroom. Rotations should be designed to further the student's training as a researcher (i.e., they should not consist merely of "lab tours" or part-time dishwashing jobs). To ensure that faculty and students have similar expectations about these rotations, the faculty have developed a set of [Research Rotation Guidelines](#).

In consultation with the faculty and department Chair, the Graduate Program Coordinator will assign a research rotation advisor for each student during each term of the first year. In making these assignments, preference will be given to: (a) matching the interests of the student with available research opportunities, and (b) assigning faculty who are willing and have the resources needed to serve as the student's faculty mentor after the first year.

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In some situations, a student and faculty member may feel that the student's research training needs are better met by staying in the same laboratory for more than one term. This possibility should be discussed with the Graduate Program Coordinator. Even if a student is convinced that he/she wants to complete the Ph.D. dissertation in the first or second laboratory he/she works in, the rotations could still prove to be a valuable part of the overall research training experience.

5. Selection of a Faculty Mentor

It is expected that by the middle or end of Spring term in the first year, each student will have identified one or more Behavioral Neuroscience faculty members willing and able to serve as the student's faculty mentor. The Graduate Program coordinator will schedule individual meetings with each student during Spring term to discuss assignment of faculty mentors. Several factors must be considered in selecting a faculty advisor for advanced research training. For example, not every faculty member will be able to accept and support a new student in his or her lab every year. There may be too many students in the lab already, there may be no funds available to support the student's research, or there may be no funds to provide a stipend. Students are free to discuss these issues with prospective mentors, the first-year faculty advisor, the Graduate Program Coordinator or the Department Chair at any time. Assignment of faculty mentors must be approved by the Graduate Program Coordinator and the Department Chair.

6. Research Paper Requirement

All students must complete a Research Paper Requirement by the end of the second year of graduate study (i.e., before the first day of class for fall term of the third year). The intent of this requirement is for students to provide written evidence of their ability to properly design, execute, analyze and interpret an original experimental investigation conducted at OHSU or one of its associated facilities. The student will conduct an experimental project under the supervision of his/her faculty mentor and one other Behavioral Neuroscience faculty member, who will serve as Co-advisor for the Research Paper. The student will then prepare a manuscript in a specific peer-reviewed journal format. The journal guidelines for manuscript preparation will be followed and a copy of these guidelines will be submitted along with the manuscript. It is expected that the written document submitted for evaluation will be the student's work. Specific details of any technical assistance, together with acknowledgement of the individual(s) who provided the assistance, must be included in the research methods or acknowledgements section of the paper. Similarly, the source of any special materials used in the research project (e.g., mouse lines/strains, antisera, probes, reagents) must be specifically acknowledged. Faculty advisors may offer general advice and comments on preliminary drafts, but must not engage in extensive copy-editing or re-writing of the document. To allow sufficient time for review and any required revisions, students should submit their papers and journal guidelines in triplicate (in hardcopy, not electronically) to the Graduate Program Coordinator by no later than July 15th of the second year of training. At this time, the advisor and co-advisor of the student for this requirement must submit a paper memo or electronic memo to the Graduate Program Coordinator confirming that they have read and approved the manuscript for submission. The Graduate Program Coordinator will then solicit written reviews from at least two Behavioral Neuroscience faculty members (excluding the faculty advisors). Additional reviews may be solicited from faculty with appropriate expertise in other programs or institutions when necessary. Reviewers will be asked to prepare their reviews and make recommendations to the Graduate Program Coordinator concerning the acceptability of the paper within 2 weeks. Failure to obtain publishable results will not be considered sufficient reason for rejecting a manuscript. However, one or more revisions may be required by the Graduate Program Coordinator before the final recommendation for approval is forwarded to the Department Chair, if the paper is accepted in fulfillment of this requirement. All students shall present a

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public seminar describing the results of their research project before or during the fall term of their third year.

There are two alternative ways of completing the Research Paper Requirement. First, students may provide evidence that an original research paper on which the student is sole author and which describes research conducted at OHSU or one of its associated facilities has been accepted for publication in a reputable peer-reviewed journal. Documentation must include a copy of the final version of the paper, written reviews, and all correspondence with the editor, including the letter of acceptance for publication. As a second alternative to the Research Paper Requirement, student may complete the requirements for the M.S. degree as described in the Graduate Council [By-Laws](#). In both cases, the alternative must be approved by the Graduate Program Coordinator and Department Chair. Also, students shall present a public seminar describing their research project before or during the fall term of their third year.

Failure to complete the Research Paper Requirement (or one of the alternatives) by the end of the second year of graduate study may be considered grounds for recommendation of dismissal from the graduate program.

7. Optional M.S. Degree

Students completing the Ph.D. degree in Behavioral Neuroscience are not required to complete an M.S. thesis. However, students admitted to the Ph.D. program may be allowed to complete requirements for the M.S. degree either as an alternative to the Research Paper Requirement (Section 6) or if they wish to withdraw from the Ph.D. program before completing all requirements for the Ph.D. degree. Students must satisfactorily complete the first two years of coursework in the Ph.D. program in order to become eligible for the M.S. degree. The M.S. research project must be approved by a Thesis Advisory Committee composed of at least three members of the graduate faculty members (including the mentor). At least two members of the Committee must have appointments in the Department of Behavioral Neuroscience. Students may request permission to replace one of the committee members by a recognized scholar who is not a member of the graduate faculty; see [Graduate Council By-Laws](#). Composition of the Advisory Committee must be approved by the Graduate Program Coordinator, Department Chair and Associate Dean for Graduate Studies. Typically, the Masters project will consist of one or more related experiments that can be completed in about 1 year. Experimental work conducted for the Research Paper Requirement may be included in the M.S. thesis. The thesis document must be prepared according to [Graduate Council Guidelines and Regulations for Thesis Preparation and Defense](#).

The primary responsibility of the Advisory Committee is to assist the student in identifying a research project whose scope meets or exceeds Graduate Council standards at the M.S. level. A majority of the Advisory Committee members must also approve the thesis document before it can be submitted for the Oral Thesis Examination. Students are strongly encouraged to solicit comments on draft versions of the thesis, but members of the committee must not engage in extensive editing or rewriting of the document. Advisory Committee members will indicate their approval of the completed project and thesis document by signing the [Behavioral Neuroscience Thesis Approval Form](#). The student must submit the signed form to the Graduate Program Coordinator for final departmental approval by the Department Chair, who will submit the Request for Oral Thesis Examination to the Associate Dean for Graduate Studies. The department's approval of the thesis for submission to the Graduate Council for oral examination does not imply that additional changes will not be required in the project or document. Final approval of the project and document is contingent on the recommendations of the Oral Thesis Examination Committee. With the advice of the student and mentor, the Graduate Program Coordinator will recommend at least

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three members of the graduate faculty (including the mentor) who do not all have primary appointments in the same department or institute for inclusion on the Examination Committee. Moreover, the Committee must include at least one member who was not a member of the student's Thesis Advisory Committee. Students may request permission to replace one of the Committee members by a recognized scholar who is not a member of the graduate faculty; see [Graduate Council By-Laws](#). Final approval of the Examination Committee is given by the Associate Dean for Graduate Studies. Students must present a public seminar describing the M.S. research project, pass the oral examination, edit the thesis document to the satisfaction of the Examination Committee, and meet all other degree requirements specified by the Graduate Council [By-Laws](#). The oral examination typically addresses issues related to the thesis project, but is not limited to the content of the thesis document. Questions related to other aspects of the student's graduate education should be anticipated. The public seminar is considered to be an important part of the oral thesis examination and the candidate's performance will be evaluated by the examination committee in the context of determining the general preparedness of the candidate to receive the degree.

Students who wish to complete the M.S. degree in place of the Research Paper Requirement must pass the Oral Thesis Examination by the end of the second year of graduate training. Students who wish to complete the terminal M.S. degree before withdrawing from the Ph.D. program must obtain formal approval from the Graduate Program Coordinator and Department Chair. In such cases, the time limit for completing the M.S. degree requirements shall be 1 year from the approval date or the end of the third year of training, whichever comes first.

A student who fails the Oral Thesis Examination may petition the department for the opportunity to be reexamined. Such petitions must be submitted in the form of a letter to the Department Chair within 2 weeks after the exam. The petition letter should include an explanation of any circumstances that may have adversely affected the student's performance on the exam. Moreover, the letter should provide a rationale for expecting a different outcome upon reexamination. The student's request will be formally considered at a meeting of the department's graduate faculty with 1 month of the receipt of the petition letter. The student will receive written notice of the department's decision. In case of reexamination, the Department Chair may recommend changes in the composition of the proposed Examination Committee. In accord with the Graduate Council [By-Laws](#), a student whose petition for reexamination is denied by the department may appeal to the Graduate Council.

8. Written Qualifying Examination

In order to advance to candidacy for the Ph.D. degree, all students must pass a written qualifying examination in behavioral neuroscience by the end of fall term of the third year of training. Students become eligible to take the qualifying examination after successful completion of the research paper requirement and satisfactory completion of all required coursework, which typically occurs by the end of the second academic year. Thus, students can prepare for and take the exam during the subsequent summer or fall terms. The date of the annual qualifying examination will be determined by the Graduate Program Coordinator in consultation with the student(s).

Exam questions will be based on required coursework from the department (i.e., statistics, behavioral neuroscience, learning and conditioning [**Behavioral Neuroscience track**] or behavioral genetics [**Behavioral Genetics track**], and ethics). In addition, the student will choose two areas in which to be examined from a menu developed by the faculty and Graduate Program Coordinator, and corresponding to themes appropriate to an education in behavioral neuroscience, consistent with faculty strengths. Reading lists will then be developed in coordination with the Graduate Program Coordinator and faculty

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with strengths in the chosen theme areas. Student will also be examined in their area(s) of research expertise. Exam questions in the student's area of expertise will be based on (but not limited to) reading lists prepared by the research advisor and co-advisor. Four hours worth of questions will be devoted to the required coursework, 2 hours to chosen theme areas, and 2 hours to the research specialty area. Thus, the entire qualifying exam will require a total of 8 hours, although students will be given an additional hour for every 2 hours-worth of questions to respond. The exam will typically be administered in parts on two consecutive days.

Each exam question will be evaluated by three or more OHSU faculty members selected by the Graduate Program Coordinator. At least two of these faculty must be from the Department of Behavioral Neuroscience. Answers will be judged on the following scale: 1 = excellent, 2 = satisfactory, and 3 = failure. Successful completion of the exam requires that most of the reviewers assign scores lower than 3 on each question. Ratings of 3 from two or more reviewers will be taken to indicate that the student is not adequately prepared in the subject area covered by the exam question. A recommendation for action to be taken in the case of unsatisfactory performance on the exam will be prepared by the Graduate Program Coordinator in consultation with the exam evaluators and the student's faculty advisor. Possible actions include (but are not limited to) further examination in the subject area of deficiency, complete reexamination, or a recommendation that the student be dismissed from the graduate program. The Graduate Program Coordinator will present a recommendation for acceptance of the exam or for an alternative course of action at the next scheduled faculty meeting after exam results have been evaluated. A single opportunity for re-examination may be offered at the discretion of the faculty. Whether this offer is made will be dependent upon not only performance on the initial exam, but also on the student's academic coursework performance, performance in the laboratory, and other areas of performance relevant to successful completion of the graduate training requirements. Should the faculty decide not to offer the student an opportunity for re-examination, the student will be recommended for dismissal from the graduate program. Unsatisfactory performance on a second exam shall be considered grounds for recommendation of dismissal from the graduate program.

Failure to pass the Qualifying Examination by the end of the fall term of the third year of graduate study, may be considered grounds for dismissal from the graduate program. In accord with the Graduate Council [By-Laws](#), students may not take the qualifying examination if they are on academic probation or if an Incomplete grade remains on their transcript.

9. Candidacy/Residency Requirements

The requirements for advancement to candidacy for the Ph.D. degree in the Department of Behavioral Neuroscience are as follows:

- (a) Successful completion of all required didactic coursework in the behavioral neuroscience core curriculum (grades of C- or better),
- (b) Successful completion of the basic science core coursework requirement (grades of C- or better),
- (c) Successful completion of CON 650: *Principles of Scientific Conduct and Practice*,
- (d) Successful completion of the Research Paper Requirement (or an approved alternative), and

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(e) Passing the Written Qualifying Examination.

Requests for advancement to candidacy must be made to the Graduate Council on a special form obtained from the Associate Dean for Graduate Studies and signed by the Graduate Program Coordinator. Students cannot be recommended for advancement to candidacy if they are on academic probation or if an Incomplete grade remains on their transcript.

In accord with the Graduate Council [By-Laws](#), a minimum of six full-time academic terms is required for the Ph.D. degree. In addition, student must be candidates for at least three academic terms prior to the final oral examination for the Ph.D. degree.

10. Dissertation Advisory Committee

A Dissertation Advisory Committee must be appointed for each student no later than one academic term after advancement to candidacy. The Advisory Committee will consist of no less than four members of the graduate faculty (including the mentor). At least three members of the Committee must have appointments in the Department of Behavioral Neuroscience. Permission may be requested to replace one of the committee members by a recognized scholar who is not a member of the graduate faculty; see Graduate Council [By-Laws](#). Requests for appointment of the Advisory Committee are submitted by the student and faculty mentor for approval by the Graduate Program Coordinator and Department Chair. The Associate Dean for Graduate Studies must approve the appointment of each Advisory Committee based upon the recommendation of the Program Director.

The Dissertation Advisory Committee is responsible for approval the Ph.D. proposal, advising the student on matters related to the dissertation project, and monitoring progress toward completion of the dissertation. This Committee will also monitor progress and provide advice related to finding a job or training position following completion of degree requirements. The Committee shall meet at least annually. The Committee must meet at least once to evaluate the Ph.D. proposal and another time to evaluate the completed dissertation project and document prior to submission of the document for the oral examination. Additional meetings may be convened as needed either by the student, the mentor, or any other member of the Committee. Students are required to provide a brief written progress report to all members of the Committee at least once during each term following appointment of the Committee until the dissertation is completed. These reports may be delivered via e-mail and copies must be forwarded to the Graduate Program Coordinator.

11. Ph.D. Proposal

A written Ph.D. Research Proposal must be submitted by the student and approved by the Dissertation Advisory Committee by the end of the third year of training (i.e., before the first day of class for fall term of the fourth year). In general, it is expected that the proposal will contain a brief review of the relevant scientific literature, a statement of the rationale or hypothesis for the project, a description of proposed methods including the approach to statistical analysis, a discussion of expected outcomes and their significance, and references. Although the length and format for this proposal may vary depending on the nature of the project, students are strongly encouraged to adopt the format of the Research Plan in the standard NIH research grant application (Form 398). A majority of the Advisory Committee members must approve the research proposal. Advisory Committee members will indicate their approval of the proposal by signing the [Behavioral Neuroscience Ph.D. Proposal Approval Form](#). The student must submit the signed form to the Graduate Program Coordinator.

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The student may proceed with his/her project after the Ph.D. proposal has been approved by the Advisory Committee. In projects involving a complicated series of experiments or in cases where later experiments depend on the outcomes of initial experiments, the Committee may require one or more follow-up meetings to review preliminary findings and/or to approve later stages of the project. When preliminary findings indicate that a change in the direction or focus of the project is required, the student must reconvene the Advisory Committee to obtain its approval for proposed changes.

12. Ph.D. Dissertation

In order to complete requirements for the Ph.D. degree, the candidate must present a written description of experimental or theoretical investigations carried out during the course of graduate study. This Ph.D. dissertation must show evidence of originality on the part of the candidate in the planning and execution of independent experimental work, and the results must represent a meaningful contribution to knowledge. Candidates must be the principal investigators of the dissertation research project and make the primary contribution to the design of the experiment(s), in the collection, analysis and interpretation of the data, and in the writing of the thesis. Specific details of any technical assistance, together with acknowledgement of the individual(s) who provided the assistance, must be included in the text of the thesis. Similarly, the source of any special materials used in the thesis project (e.g., mouse lines/strains, antisera, probes, reagents) must be specifically acknowledged in the text of the thesis.

The dissertation document must be prepared according to the [Graduate Council Guidelines and Regulations for Thesis Preparation and Defense](#). In general, experimental findings are presented in one or more of a series of chapters that form the main body of the thesis. With the approval of the Dissertation Advisory Committee, a student may prepare the chapter(s) describing experimental results in the form of a manuscript that has been or may be submitted for publication. Work presented in manuscript format must meet all of the Graduate Council requirements for a dissertation research project.

A major role of the Dissertation Advisory Committee is to assist the student in identifying a research project whose scope meets or exceeds Graduate Council standards at the Ph.D. level. A majority of the Advisory Committee members must also approve the thesis document before it can be submitted for the Oral Thesis Examination. Students are strongly encouraged to solicit comments on draft versions of the dissertation, but members of the committee must not engage in extensive editing or rewriting of the document. Advisory Committee members will indicate their approval of the completed project and thesis document by signing the [Behavioral Neuroscience Thesis Approval Form](#). The student must submit the signed form to the Graduate Program Coordinator for final departmental approval by the Department Chair, who will submit the Request for Oral Thesis Examination to the Associate Dean for Graduate Studies. The department's approval of the dissertation for submission to the Graduate Council for oral examination does not imply that additional changes will not be required in the project or document.

13. Oral Thesis Examination Committee/Oral Examination

Final approval of the project and document is contingent on the recommendations of the Oral Thesis Examination Committee. With the advice of the student and mentor, the Graduate Program Coordinator will recommend at least four members of the graduate faculty who do not all have primary appointments in the same department or institute for inclusion on the Examination Committee. Permission may be requested to replace one of the committee members by a recognized scholar who is not a member of the graduate faculty; see Graduate Council [By-Laws](#). The committee must include at least one member who was not a member of the student's dissertation advisory committee. The Chair of the Oral Examination Committee shall be appointed by the Associate Dean for Graduate Studies, based upon the

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recommendation made by the Graduate Program Coordinator. The Chair of the Oral Examination Committee must be a member of the Graduate Faculty. Final approval of the Examination Committee is given by the Associate Dean for Graduate Studies. Students must present a public seminar describing the Ph.D. research project, pass the oral examination, edit the dissertation document to the satisfaction of the Examination Committee, and meet all other degree requirements specified by the Graduate Council [By-Laws](#). The oral examination typically addresses issues related to the dissertation project, but is not limited to the content of the dissertation document. Questions related to other aspects of the student's graduate education should be anticipated. The public seminar is considered to be an important part of the oral thesis examination and the candidate's performance will be evaluated by the examination committee in the context of determining the general preparedness of the candidate to receive the degree.

A student who fails the Oral Thesis Examination may petition the department for the opportunity to be reexamined. Such petitions must be submitted in the form of a letter to the Department Chair within 2 weeks after the exam. The petition letter should include an explanation of any circumstances that may have adversely affected the student's performance on the exam. Moreover, the letter should provide a rationale for expecting a different outcome upon re-examination. The student's request will be formally considered at a meeting of the department's graduate faculty within 1 month of the receipt of the petition letter. The student will receive written notice of the department's decision. In case of reexamination, the Department Chair may recommend changes in the composition of the proposed Examination Committee. In accord with the Graduate Council [By-Laws](#), a student whose petition for reexamination is denied by the department may appeal to the Graduate Council.

14. Annual Review of Progress

Each graduate student in the program is required to submit an annual written progress report to the Graduate Program Coordinator no later than June 20th of each year. This report will be used by the department faculty as part of its annual review of student progress and it will be added to the student's departmental file. The information contained in these reports may also be used when preparing training grant progress reports or responding to other requests about the department's program. The report should include the following information:

- (a) a summary of coursework completed during the previous 12 months,
- (b) accomplishments related to program advancement (e.g., thesis proposal, oral defense, qualifying examination, etc.),
- (c) research techniques/methods that have been learned,
- (d) research projects in which the student has participated (including research rotation projects),
- (e) papers written, submitted, or published,
- (f) attendance/presentations at scientific meetings,
- (g) honors or awards (e.g., grants, travel awards),
- (h) plans/goals for the coming year,

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(i) plans/goals or actions towards post graduate job attainment, and

(j) other important things related to professional development.

The expectation is to summarize this information in one single-spaced typewritten page. The report should be submitted by email or as printed hardcopy to both the Graduate Program Coordinator and Department Manager.

A performance review is accomplished by the faculty for each student annually. This review occurs during summer term. In addition to information provided in each student's annual report, transcripts are reviewed and comments may be offered by course directors and advisors. In general, the student's advisor will have primary responsibility for providing feedback to the student, especially if there are any concerns raised about academic performance or progress toward meeting program goals. However, the Graduate Program Coordinator should be contacted by the student if there are any remaining concerns about performance or program expectations.

15. Teaching and Educational Outreach Activities

The program does not require students to participate in teaching in order to meet degree requirements. However, the faculty recognizes that teaching may be an important part of a student's future career goals, and they strongly support participation in activities that strengthen teaching-related skills. For example, the required departmental seminar (BEHN 607) is designed, in part, to help students develop and refine their oral presentation skills. Given the program's emphasis on coursework and research training during the first few years, faculty members generally discourage students from accepting responsibility to serve as course instructors before advancement to Ph.D. candidacy. Prior to Ph.D. candidacy, interested students should, in consultation with their faculty mentors, limit such activities to occasional guest lectures and classroom or laboratory demonstrations. Upon advancing to candidacy, students interested in obtaining more formal or extensive teaching experience may wish to seek such opportunities at one or more of the local colleges and universities. The Graduate Program Coordinator and other program faculty can provide information and assistance in identifying such opportunities. Moreover, students may receive guidance and academic credit for such activities by registering for Reading & Conference (BEHN 605) with any BEHN faculty member. Students must consult their faculty mentors before making a major commitment to outside teaching or outreach activities (e.g., teaching one full course or more). Decisions to participate in such activities must always be tempered by the need to meet formal program requirements in a timely manner, to achieve excellence in research (e.g., publications), and to complete the Ph.D. dissertation.

16. Leave of Absence

Students are generally expected to register during every term until degree requirements are completed (see Section 2.2). However, individual circumstances may sometimes require an interruption of the student's program. In such cases, students must submit a written request to the Graduate Program Coordinator for a leave of absence. Requests will be considered by the department graduate faculty and a recommendation to accept or deny the request will be sent by the Department Chair to the Associate Dean for Graduate Studies. Final approval is given by the Dean of the School of Medicine upon recommendation by the Graduate Council. A student on leave of absence for 12 months or less may be reinstated in the graduate program by registering for an appropriate course load. However, readmission after a leave of absence in excess of one-year's duration will require reexamination of the student's credentials and formal approval by the department and Graduate Council.

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17. Dismissal from Graduate Program

A student may be dismissed from the graduate studies program because of unsatisfactory academic performance or unacceptable conduct. Students may be dismissed only by the Dean of the School of Medicine. To recommend dismissal of a student, the Department Chair shall inform the Associate Dean for Graduate Studies in writing of the reasons for the program's recommendation. Additional information on the grounds for dismissal and the process is provided in the Graduate Council [By-Laws](#).

18. Time Constraints

Students are expected to complete various program requirements according to the timetable specified in this document. Furthermore, the Graduate Council [By-Laws](#) limit the time period from matriculation to granting the Ph.D. degree to seven calendar years. Students may be dismissed from the graduate studies program for failure to complete a departmental requirement within the specified time period or for failing to complete all Ph.D. requirements in seven calendar years. In special circumstances in which strong justification exists, the department may grant an extension. In such cases, the extension must be approved by the faculty, Graduate Program Coordinator, and Department Chair. In the case of time limits specified in the Graduate Council [By-Laws](#), it will also be necessary to obtain approval from the Graduate Council and Associate Dean for Graduate Studies.

19. Exceptions

Individual student requests for waiver of a requirement specified by the departmental guidelines must be approved by the faculty, Graduate Program Coordinator, and Department Chair. In the case of requirements specified in the Graduate Council [By-Laws](#), it may also be necessary to obtain approval from the Graduate Council and Associate Dean for Graduate Studies.