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Interdisciplinary Program Coordinator
Handbook Editor
### Summer 2012

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<tr>
<td>March 26-May 6</td>
<td>Online registration for summer classes</td>
</tr>
<tr>
<td>April 20, Fri</td>
<td>Deadline for intra-university transfer summer applications</td>
</tr>
<tr>
<td>June 4, Mon</td>
<td>Fall 2012 registration windows open for all new incoming undergraduate students; Check YES for the time of your registration window; Registration for summer session in most schools; Division of Unclassified Studies summer registration</td>
</tr>
<tr>
<td>June 5, Tues</td>
<td>First-half and full-term summer classes begin</td>
</tr>
<tr>
<td>June 5-7, Tues-Thur</td>
<td>First-half and full-term summer session change period</td>
</tr>
<tr>
<td>June 7, Thur</td>
<td>Deadline for students to add a first-half or full-term summer class, register for pass-fail status in a class or drop a class without entry on record;</td>
</tr>
<tr>
<td>June 20, Wed</td>
<td>Deadline for students to withdraw from a first-half class; Deadline for students to change from pass-fail to graded status in a first-half class</td>
</tr>
<tr>
<td>June 22, Fri</td>
<td>Fall 2012 registration windows close for all incoming undergraduate students;</td>
</tr>
<tr>
<td>July 1, Sun</td>
<td>Deadline for health questionnaires to be returned to Student Health for first-time students</td>
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<tr>
<td>July 5, Thur</td>
<td>First-half classes end</td>
</tr>
<tr>
<td>July 6, Fri</td>
<td>Examinations for first-half classes;</td>
</tr>
<tr>
<td>July 9, Mon</td>
<td>Division of Unclassified Studies second-half registration;</td>
</tr>
<tr>
<td>July 10, Tues</td>
<td>Second-half classes begin</td>
</tr>
<tr>
<td>July 10-12, Tues-Thur</td>
<td>Second-half session change period</td>
</tr>
<tr>
<td>July 12, Thur</td>
<td>Deadline for undergraduates to register for pass-fail status in or drop a second-half class without entry on record; Last day undergraduates may withdraw from a full-term summer class; Deadline for undergraduates to change from pass-fail to graded status in a full-term summer class</td>
</tr>
<tr>
<td>July 18, Wed</td>
<td>Fall 2012 Open enrollment / change period begins; No registration window is needed</td>
</tr>
<tr>
<td>Aug. 1, Wed</td>
<td>Deadline to waive summer student health insurance</td>
</tr>
<tr>
<td>Aug. 9, Thur</td>
<td>Second-half and full-term summer classes end for most schools</td>
</tr>
<tr>
<td>Aug. 10, Fri</td>
<td>Examinations for second-half and full-term summer classes; Summer semester ends; Graduation date for August graduates</td>
</tr>
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### Fall 2012

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<th>Date</th>
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<tr>
<td>Aug 1, Wed</td>
<td>Deadline for all students (except internationals) to waive student health insurance coverage</td>
</tr>
<tr>
<td>Aug 10, Fri</td>
<td>Deadline for intra-university transfer fall applications</td>
</tr>
<tr>
<td>Aug 15, Wed</td>
<td>Deadline for payment of tuition, fees and all other charges associated with the beginning of the semester. Payment must be RECEIVED in the Office of Student Accounts by the close of business of August 15. Students who have not cleared their account by this deadline may be dropped from classes, their registration may be cancelled and Commodore cash and registration access may be denied. A late payment fee will be assessed of 1.5% (minimum $5.00) on the outstanding balance. Students anticipating having a problem meeting the payment deadline should contact the Office of Student Accounts at 615-322-6693 or 1-800-288-1144 before August 15, to make payment arrangements and to have their class registrations held.</td>
</tr>
<tr>
<td>Aug 15, Wed</td>
<td>Deadline for all students to waive the activity and recreation fees</td>
</tr>
<tr>
<td>Aug 17, Fri</td>
<td>International student orientation for ALL students (9 a.m. to 1 p.m.) SLC Ballrooms</td>
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<tr>
<td>Aug 19, Sun</td>
<td>Founders Walk; Residence halls open at 9 a.m. for upper-class students</td>
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<tr>
<td>Aug 21, Tues</td>
<td>Division of Unclassified Studies fall registration</td>
</tr>
<tr>
<td>Aug 22, Wed</td>
<td>First day of classes for undergraduate schools; Student registration change period begins.</td>
</tr>
<tr>
<td>Aug 28, Tues</td>
<td>Last day to wait-list a class; Wait list ends at 11:59 p.m. CDT</td>
</tr>
<tr>
<td>Aug 29, Wed</td>
<td>Fall 2012 Open Enrollment / Change Period ends at 11:59 p.m. CDT. This is the deadline for students to add a course or to make other changes in YES. After this date, any withdrawals or adjustments in level or in grading status must be completed using the appropriate forms in the school registrar's office.</td>
</tr>
<tr>
<td>Sept 5, Wed</td>
<td>Last day to drop a class with no entry on the record, to adjust level in math or foreign language class or to register for pass/fail status;</td>
</tr>
<tr>
<td>Sept 6-14, Thur-Fri</td>
<td>Discrepancy reports due by Friday, September 14, 2012</td>
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<tr>
<td>Sept 7, Fri</td>
<td>Deadline for international students health insurance waiver</td>
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<td>Oct 4-5, Thur-Fri</td>
<td>Fall break for undergraduate students</td>
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<tr>
<td>Oct 10, Wed</td>
<td>Mid-semester undergraduate deficiency reports due</td>
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<tr>
<td>Oct 12-14, Fri-Sun</td>
<td>Family Weekend</td>
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<tr>
<td>Oct 15, Mon</td>
<td>Spring 2013 class schedule is available in YES</td>
</tr>
<tr>
<td>Oct 19, Fri</td>
<td>Last day undergraduate students may withdraw from fall semester classes; Last day to change from pass/fail to graded status in a fall semester class; Forms due to school registrar's office by 4 p.m. CDT</td>
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Spring 2013

Jan 3, Thur  Deadline for all students to pay spring charges without a late payment fee; Deadline to waive the student health insurance for first-time students in the spring semester
Jan 3, Thur  Deadline for all students to waive the activity and recreation fees
Jan 4, Fri  Undergraduate residence halls open at noon
Jan 4, Fri  International Student Spring Orientation (1 to 3 p.m.)
Jan 4, Fri  Division of Unclassified Studies spring registration
Jan 7, Mon  First day of classes for undergraduate schools; Student registration change period begins.
Jan 7, Mon  English Language Center - English for Academics and Professionals Testing 9 a.m.
Jan 11, Fri  Last to wait-list a class; wait lists end at 11:59 p.m. CDT
Jan 14, Mon  Spring 2013 Open enrollment / change period ends at 11:59 p.m. CDT. This is the deadline for students to add a course or to make other changes on YES. After this date, any withdrawals or adjustments in level or in grading status must be completed using the appropriate forms in the school registrar's office.

Jan 14, Mon  English Language Center classes begin
Jan 21, Mon  Martin Luther King, Jr. Day - classes cancelled
Jan 21, Mon  Last day to drop a class with no entry on the record, to adjust level in math or foreign language class or to register for pass/fail status;
Jan 22-30, Tues-Wed  Discrepancy reports due by Wednesday, January 30, 2013
Mar 2-10, Sat-Sun  Spring holidays in most schools TBA Fall 2013 class schedule is available in YES
Mar 6, Wed  Mid-semester undergraduate deficiency reports due
Mar 15, Fri  Last day undergraduate students may withdraw from spring semester classes; Last day to change from pass/fail to graded status in a spring semester class; Forms due to school registrar's office by 4 p.m. CDT
Mar 17, Sun  Founder's Day, the anniversary of the founding of Vanderbilt University in 1873
Apr 3, Wed  Commencement deadline to rent regalia for May 2013 Commencement ceremony.
Apr 4, Thur  Spring 2013 Faculty Assembly
Apr 8, Mon  Fall 2013 registration windows begin for undergraduate students; Check YES for the time of your registration window
Apr 15, Mon  English Language Center classes end
Apr 16-22, Tues-Mon  Dead week for Arts and Science and Blair classes; No examinations of any type or major project deadlines are allowed
Apr 18-19, Thur-Fri  Board of Trust
Apr 19, Fri  Deadline for intra-university transfer summer applications
Apr 19-20, Fri-Sat  Rites of Spring
Apr 22, Mon  Undergraduate classes end
Apr 23-May 2, Tues-Thur  Undergraduate examinations and reading days
Apr 26, Fri  Fall 2013 registration windows close for currently enrolled undergraduate students.
May 4, Sat  First-year residence halls close at 9 a.m.
May 4, Sat  Deadline for submission of Spring 2013 final grades at 11:59 p.m. CDT
May 8, Wed  Commencement event - "The Party" - for degree candidates, their friends and families; Vanderbilt Community, their friends and families
May 9, Thur  Commencement event - "Senior Class Day" - Senior Day speaker and faculty seminars
May 10, Fri  Commencement event - Ceremony on Alumni Lawn
May 11, Sat  Residence halls close at 1 p.m.
Summer 2013

Mar 25-May 5 Registration windows for all Summer sessions

May 3, Fri Division of Unclassified Studies Maymester registration
May 4, Sat Residence halls open for Maymester at 2 p.m.
May 6, Mon Maymester begins
May 6-7, Mon-Tues Maymester change period
May 31, Fri Maymester ends; Maymester examinations
June 1, Sat Maymester residence halls close at 9 a.m.
June 2, Sun First-half summer session residence halls open at noon
June 3, Mon Registration for summer session in most schools
June 3, Mon Division of Unclassified Studies summer registration
June 4, Tues First-half and full-term summer classes begin
June 4-6, Tues-Thur First-half and full-term summer change period
June 10, Mon Peabody Module I registration and classes begin
July 1, Mon Deadline for health questionnaires to be returned to Student Health for first-year students
July 4, Thur First-half classes end
July 5, Fri Examinations for first-half classes; Peabody Module 1 classes end
July 6, Sat First-half session residence halls close at 9 a.m.
July 7, Sun Second-half session residence halls open at noon
July 8, Mon Supplementary registration for second-half classes; Peabody Module II classes begin
July 8, Mon Division of Unclassified Studies registration second-half classes
July 9, Tues Second-half classes begin
July 9-11, Tues-Thur Second-half change period
TBA Fall 2013 Open enrollment / change period begins; No registration window is needed
Aug 1, Thur Deadline to waive summer student health insurance
Aug 2, Fri Peabody Module II classes end
Aug 8, Thur Second-half classes end
Aug 9, Fri Examinations for second-half and full-term summer classes; Summer semester ends; Graduation date for August graduates
Aug 10, Sat Second-half session residence halls

For more detailed information on University-wide Graduate School academic events, please request a print-copy of The Bulletin of Vanderbilt University: Graduate School from Roz Johnson or download a PDF version at:

http://www.vanderbilt.edu/catalogs/grad/graduate.pdf

Or download the complete Graduate School calendar at:

http://registrar.vanderbilt.edu/calendar/accal/2012-2013_gradcalendar.pdf

An updated University Calendar can be found at:  http://calendar.vanderbilt.edu/
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Welcome to the Vanderbilt Brain Institute! Congratulations on choosing one of the finest neuroscience graduate programs in the nation. You will find that with a lot of hard work and determination, Vanderbilt will turn out to be a fantastic decision. The VBI was founded in 1999 as a trans institutional entity to oversee and facilitate the extensive neuroscience-related endeavors carried out on the Vanderbilt campuses. As such, our primary mission is to promote research, education and training in the brain-related disciplines here at Vanderbilt, with the stated goal of fostering excellence in each of these arenas. Our ranks have grown amazingly in these past eleven years, and we are now comprised of nearly 500 faculty, students and staff who engage in neuroscience-directed research, training and clinical service. These individuals are distributed throughout the Vanderbilt campus, and represent 5 colleges, 22 departments and 27 centers and institutes. One of the primary responsibilities of the VBI is to administer the Neuroscience Graduate Program, one of the nation’s leading programs in the predoctoral training of students interested in neuroscience. The Neuroscience Graduate Program is currently made up of 81 graduate students and 64 training faculty, and consistently ranks at the top of national listings of neuroscience graduate programs.

The Program has two major emphasis areas: Cellular & Molecular Neuroscience and Cognitive & Systems Neuroscience, and offers research opportunities that span the breadth of contemporary neuroscience. Peruse this handbook or our website a bit to learn more about these training opportunities and our academic program.

In addition to this educational mission, the VBI also plays major roles in shaping the neuroscience research activities at Vanderbilt, in facilitating postdoctoral training and in the community outreach. The VBI sponsors the annual Brain Awareness Month activities, which feature a series of public events designed to promote knowledge about the brain and brain-related illness and dysfunction. In concert with the Vanderbilt Silvio O. Conte Center for Neuroscience Research, we are actively involved in creating a world-class neuroscience exhibit at the local Adventure Science Center. Finally, the VBI offers a unique and exceptional method of scientific communication in the publication of *Vanderbilt Reviews Neuroscience*, the official journal of the Vanderbilt Brain Institute and which features the work of our graduate students.

We hope you take the time to read over this handbook carefully and that you take this opportunity to learn more about the VBI and the Neuroscience Graduate Program. We wholeheartedly welcome you as a member of our thriving and energetic neuroscience community here at Vanderbilt!
How to use this Handbook

The purpose of this Handbook is to help trainees make optimal use of the time they will invest in their graduate training in neuroscience. The Handbook provides information about the goals and global structure of the Neuroscience Graduate Program to assist students in ascertaining if these features of the Program are compatible with their training and career goals. Additionally, this Handbook outlines Program requirements that are currently in place so that students have an understanding of the pivotal events and achievements associated with successful completion of training in Vanderbilt’s Neuroscience Graduate Program, and it provides students with an estimate of the timing of these events.

While it is the goal of the VBI staff to keep this Handbook as up-to-date and applicable to Program and Graduate School requirements as possible, the student must understand that the administration of such a vast Program is dynamic, with changes constantly being suggested or mandated as the academic year goes on. The Program will be modified over time according to the evolving needs of trainees and to keep the Program at the leading edge of training innovation and excellence. Therefore, the Neuroscience Graduate Student Handbook should not be used as an immutable statement of requirements and time-tables for Vanderbilt’s Neuroscience Graduate Program. This Handbook makes no guarantees as to the requirements of the program over the entire time of a student’s matriculation. Instead, the guidelines outlined herein are only official as of the date of the Handbook’s publication. Because the Graduate Program Handbook will be continually updated to reflect Program modifications, the Handbook should be used as a preliminary first step for information about the requirements of the Neuroscience Graduate Program. Students should be sure to check over the handbook at least once a year to be sure they are aware of any Program developments occurring in the interim. Always confirm Neuroscience Program requirements with the Director of Graduate Studies, the Interdisciplinary Program Coordinator, or other Program officials. Always confirm Graduate School requirements with the appropriate Graduate School official.

Welcome to the Vanderbilt Neuroscience Graduate Program; you’ve made a great decision!

Roz Johnson, B.B.A.
Interdisciplinary Program Coordinator
Editor, Program Handbook
Who We Are - Vanderbilt Brain Institute – Neuroscience Graduate Program
http://braininstitute.vanderbilt.edu/people/staff.php

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Who We Are – Graduate School
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Liz Leis
Assistant Registrar
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Who We Are – Graduate Student Organizations
Neuroscience Student Organization (NSO)
http://www.mc.vanderbilt.edu/root/vumc.php?site=NSO
Christopher Muller, President
christopher.muller@vanderbilt.edu

Graduate Student Council (GSC)
http://studentorgs.vanderbilt.edu/gsc
Teniel Ramikie, GSC Neuroscience Representative
teniel.s.ramikie@vanderbilt.edu

Enhancing Diversity in Graduate Education (VU-EDGE)
http://www.vanderbilt.edu/edge/resources.php

What We Do – Publications
Vanderbilt Reviews Neuroscience (VRN)
http://vrn.vanderbilt.edu
Andrew Hardaway and Maureen McHugo, Editors-in-Chief
andrew.hardaway@vanderbilt.edu and maureen.mchugo@vanderbilt.edu

http://bret.mc.vanderbilt.edu/bret/php_files/abstract.php

BRET Newsletter
http://bret.mc.vanderbilt.edu/bret/
Abigail H Brown, Ph.D.
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Academic Regulations
(excerpted from The Bulletin of Vanderbilt University: Graduate School 2012/2013)
http://www.vanderbilt.edu/catalogs/grad/graduate.pdf#regs

VANDERBILT’S students are bound by the Honor System inaugurated in 1875. Fundamental responsibility for the preservation
of the system inevitably falls on the individual student. It is assumed that students will demand of themselves and their fellow
student’s complete respect for the Honor System. All work submitted as a part of course requirements is presumed to be the
product of the student submitting it unless credit is given by the student in the manner prescribed by the course instructor.
Cheating, plagiarizing, or otherwise falsifying results of study are specifically prohibited under the Honor System. The system
applies not only to examinations but also to written work and computer programs submitted to instructors. The student, by
registration, acknowledges the authority of the Graduate Honor Council.

The university’s Graduate Student Conduct Council has original jurisdiction in all cases of non-academic misconduct
involving graduate and professional students.

Students are expected to become familiar with the Rules Governing the Graduate Honor Council of Vanderbilt University,
available at the time of registration. It contains the constitution and bylaws of the Graduate Student Honor Council, Appellate
Review Board, and related regulations.

Detailed descriptions of Honor System violations and procedures are also available on the Web at:

www.vanderbilt.edu/gradschool.

Academic Requirements
Candidates for graduate degrees must have satisfactorily completed all academic courses, and dissertation requirements, have
passed all prescribed examinations, and be free of indebtedness to the university at the time of graduation.

The academic requirements described on the following pages have been established by the Graduate Faculty and are
applicable to all graduate students at Vanderbilt.

The Neuroscience Ph.D. program has additional requirements. Students are advised to refer to this handbook and to
consult their advisers for requirements.

Students who were completing undergraduate or advanced degrees at the time of their admission must provide to the
Graduate School, before initial registration, an official final transcript showing that the degree has been received and the date it
was granted.

Intent to Graduate
Intent to Graduate form must be submitted to the Graduate School at the beginning of the semester in which the student
expects to receive a degree. Students should check the University Academic Calendar each semester to determine deadline
dates. Intent to Graduate forms are available at the Graduate School website,

http://www.vanderbilt.edu/gradschool/current_students/index.php#intent

Requirements for the Ph.D. Degree

The degree of doctor of philosophy is awarded in recognition of high attainment in a special field of knowledge, as evidenced by
examination and by a dissertation presenting the results of independent research. General requirements are listed below.
Neuroscience has additional requirements, and students should carefully check those program regulations.

Admission to Candidacy
Admission to the Graduate School does not imply admission to candidacy for the Ph.D. degree. To be admitted to candidacy the
student must pass a qualifying examination. The examination will be administered by the student’s Ph.D. committee, which will
supervise subsequent work toward the degree. Upon completion of these requirements the Ph.D. committee will recommend
to the Graduate School that the student be admitted to candidacy.

Residence and Course Work
The Ph.D. degree requires at least three academic years of graduate study. A student must complete 72 hours of graduate work
for credit, of which a minimum of 24 hours in formal, didactic course and seminar work in the Vanderbilt Graduate School is
required. In Neuroscience students are required to present considerably more hours in formal course work than the 24-hour
minimum. The remainder of the 72 hours, above the program requirements in formal course hours, may be in dissertation research hours, in special readings, and in transfer credit if applicable. Performance in dissertation research does not affect the grade point average.

“Formal, didactic course work” is approved courses taken for credit other than dissertation research courses. Students should check program regulations for the number of “formal course” hours required for their particular track.

All students working full time toward the Ph.D. must register each fall and spring semester. When the required 72 hours of course work has been completed, registration for dissertation research without hourly credit applies; this reflects full-time effort on research and confers full-time student status. The minimum tuition of $200 is charged.

Qualifying Examination
The purpose of the qualifying examination is to test the student’s knowledge of the field of specialization, to assess familiarity with the published research in the field, and to determine whether the student possesses those critical and analytic skills needed for a scholarly career.

The examination is conducted by a Ph.D. committee appointed by the Graduate School on advice of the chair or director of graduate studies of the program. The committee consists of not fewer than four members of the Graduate Faculty. Three of the members must be graduate faculty from within the student’s department/program and one from outside the program. Any variation of the committee makeup must be approved by the Graduate School. The committee must be appointed by the Graduate School no less than two weeks before the time the student expects to take the qualifying examination.

The functions of the Ph.D. committee are (a) to administer the qualifying examination, (b) to approve the dissertation subject, (c) to aid the student and monitor the progress of the dissertation, and (d) to read and approve the dissertation and administer the final oral examination.

The qualifying examination may be administered at any time during the school year and shall be completed within a period of four weeks. Before a qualifying examination can be scheduled, the student must have completed at least 24 hours of graduate work (to include all course work required for the degree) and the language requirement, if any. In some programs the student may be required to demonstrate basic competence in the discipline through a written preliminary examination prior to the actual qualifying examination.

All departments and other units offering Ph.D. programs must set a maximum time limit within which a student, under normal circumstances, is required to take the qualifying examination. That maximum time limit must not exceed four years.

The qualifying examination may be written or oral, or both. The Graduate School must be notified of the time and place of the qualifying examination at least two weeks in advance. The qualifying examination is not a public examination, and voice recordings of it are not permitted. A student is allowed only two opportunities to pass the qualifying examination. The qualifying examination results form, signed by the committee members and the director of graduate studies for the program, shall be forwarded to the Graduate School immediately after the examination.

When the student has passed the qualifying examination, the Ph.D. committee shall recommend to the Graduate School that the student be admitted to candidacy for the degree.

Dissertation
A candidate for the Ph.D. degree must present an acceptable dissertation. The dissertation demonstrates that the candidate has technical competence in the field and has done research of an independent character. It must add to or modify what was previously known, or present a significant interpretation of the subject based upon original investigation. The subject of the dissertation must be approved by the student’s faculty adviser and Ph.D. committee.

The dissertation must be completed within four years after a student has been admitted to candidacy for the degree. Upon petition to the Graduate School, a one-year extension of candidacy may be granted. If such a period has expired without successful completion of the dissertation, the student may be dismissed from the Graduate School. Readmission to the Graduate School, and to candidacy, requires application to the Graduate School, with approval of the program faculty. In such cases the student may be required, by the Graduate School or by the Ph.D. committee, to demonstrate competence for readmission by taking a qualifying examination or additional course work.

The candidate submits a copy of the completed dissertation to the Ph.D. committee at least two weeks prior to the dissertation defense. The committee reviews the dissertation and conducts the final examination.
Final copies of the approved dissertation may be submitted to the Graduate School in electronic or printed form. Electronic submission is encouraged. Style specifications, paper requirements, fees, and further details are listed at [http://www.vanderbilt.edu/gradschool/current_students/index.php#theses](http://www.vanderbilt.edu/gradschool/current_students/index.php#theses). With either option, two copies of the title page, with the original signatures of not less than a majority of the Ph.D. committee, and two copies of an abstract of not more than three hundred fifty words, signed by the student’s adviser, must be turned in to the Graduate School by the date specified on page 6. Students who submit their dissertations electronically revise the title page, convert the documents to a PDF file, and upload the document on the Electronic Theses and Dissertations (ETD) website, [http://etd.library.vanderbilt.edu](http://etd.library.vanderbilt.edu).

Dissertations are intended to be of benefit to the academic community and to society in general, and thus are required to be publicly available. This is accomplished by placing a copy in the Vanderbilt Heard Library, posting an electronic version on the library website, and by filing with ProQuest for inclusion in an accessible database. In some instances, students may request a delay in the release or posting of their dissertations for a limited time period. This can be done, for example, to protect intellectual property, to allow time to file a patent application, or to coordinate with the timing of publication in another form. In no circumstance will the release of the dissertation be delayed for more than two years. Unless requested for a shorter period of time, any request to delay public release will expire at the end of two years and the Graduate School will proceed with the public release through the library.

All dissertations are microfilmed. Microfilming does not preclude publication by other methods, but microfilming is tantamount to publication and a microfilmed dissertation, if not copyrighted, is in the public domain and may not subsequently be copyrighted in its original form. For students who choose to have their dissertation copyrighted, the Graduate School will help facilitate the process. Microfilming, binding, and copyright fees must be paid at the time the dissertation is turned in to the Graduate School. The abstract is published in Dissertation Abstracts, which publicizes the completion of the dissertation and announces its availability on microfilm.

**Final Examination**
The candidate must pass his or her dissertation defense at least fourteen days before the end of the term in which the degree is to be conferred, or by April 1 for May graduation. The final oral examination is administered by the student’s Ph.D. committee and is on the dissertation and significant related material; the student is expected to demonstrate an understanding of the larger context in which the dissertation lies. The public is invited to attend the final examination, which is announced in advance in Vanderbilt’s electronic calendar.

The chair of the Ph.D. committee or the director of graduate studies of the program, after consultation with the candidate, shall notify the Graduate School in advance of the place and time of the examination and the title of the dissertation. This should be done no later than two weeks prior to the examination. The Graduate School then formally notifies the Ph.D. committee and submits the defense notice to Vanderbilt’s electronic calendar. The dissertation defense results form, signed by the committee members and the director of graduate studies for the program, should be forwarded immediately to the Graduate School.

**Further Requirements**
It should be understood that the requirements stated above are minimum and that the Neuroscience Graduate Program has additional requirements outlined in this handbook. Students are urged to consult this handbook as well as departmental chairs and directors of graduate studies to learn the requirements of the program.

**Registration**
The normal academic, full-time registration is 9 to 13 hours per semester (6 to 9 hours in the summer). Students registered for 9 or more didactic hours per semester (6 or more hours in the summer) are defined as full time. After completing the hourly requirements for the degree, full-time students register for Ph.D. (399) research without hourly credit to reflect full-time effort on research.

During each semester currently enrolled students are asked to meet with their advisers and directors of graduate studies to plan their schedules for the coming semester. All students must later complete official registration at the appropriate time using YES (Your Enrollment Services). At the beginning of each semester and the summer session, students must validate their registration by submission of an online registration data form. A late registration fee of $30 is charged to students who fail to register by the stated registration dates.

All full-time graduate students, including those receiving scholarship, assistantship, fellowship, or traineeship support through the university, must register each fall and spring semester with no breaks in registration to remain in good standing.

**Changes in Registration**
Changes in registration may be made through YES during the change period (the first ten class days of the semester) with consent of the Program. A student is not permitted to add or drop a course, change the number of hours in a variable-credit course, or change from audit to credit status after the end of the change period. A student may formally withdraw from a
course after the end of the change period with the permission of the Program, and a grade of W will be given. After the mid-
point of the semester, a student is not permitted to withdraw from the course except under certain circumstances. Failing the
course is not considered one of the circumstances. Students should note, in the section on tuition and fees, the regulations
concerning tuition obligations for courses dropped after the first week of the term.

Courses in which there is a significant change in subject matter each semester (e.g., special topics courses) may be
repeated for credit within limits noted in the course listings of this catalog.

Grading System
The grading system in the Graduate School includes the letter grades A, B, C, D, and F. A student will not be granted graduate
credit for any course in which a grade less than C is received. Grades below C may be repeated once at the discretion of the
course director and the department. In this situation, the more recent grade will be calculated in the final grade point average.
The letter I may be used at the discretion of the instructor in those cases in which the student is not able to complete work in
the normal time. The notation W is entered onto the transcript when a student withdraws from a course or from the Graduate
School. A grade point average of 3.0 is required for graduation.

Letter grades are assigned grade point values as follows:

\[
\begin{align*}
A+ &= 4.0 \\
A  &= 4.0 \\
A- &= 3.7 \\
B+ &= 3.3 \\
B  &= 3.0 \\
B- &= 2.7 \\
C+ &= 2.3 \\
C  &= 2.0 \\
C- &= 1.7 \\
D+ &= 1.3 \\
D  &= 1.0 \\
D- &= 0.7 \\
F  &= 0.0
\end{align*}
\]

S/U grades are given every semester for all research courses (369, 379, and 399), regardless of the number of hours
registered. The accumulation of three (3) U grades over the course of study will lead to dismissal from the program and the
Graduate School.

Students receive grades in all courses except those approved for credit/non-credit, audits, and some seminars. An I that is
not replaced by a letter grade within one year may be changed to the grade F at the discretion of the instructor; otherwise, the
I may become permanent and remain on the transcript as such.

Certain courses approved by the graduate faculty for credit/ non-credit or Pass/Fail count toward total hours. Courses that
are strictly no-credit, however, do not count toward total hours or in calculating grade point average, although grades for such
courses are entered on the student’s record.

With the instructor’s permission, students are permitted to audit certain courses. Students who audit are expected to
attend the course regularly. Students must be registered for regular courses in order to audit. Audits are listed on the student’s
transcript. Audits are limited to two per semester.

Grade Change Policy
For a student enrolled in the Graduate School, a grade recorded in the University Registrar’s Office may be changed only upon
the written request of the instructor, endorsed by the appropriate official (usually an associate dean) within the school/college
that offered the course, and then the approval of the associate dean of the Graduate School. An instructor’s petition to change
a grade must include a brief rationale for the change. Changing a recorded grade is a serious matter and, in general, petitions
will be approved only upon certification that the original grade was in error or, in the case of an Incomplete, that the
outstanding requirement(s) have been completed. Request for exceptions to this policy should be directed to the associate
dean of the Graduate School and will be considered on an individual basis; these may require additional certifications and
approvals.

Academic Probation
A grade point average of 3.0 is necessary for graduation. Students who fall below an average of 3.0 are placed on probation for
one semester. If the student’s performance does not improve during that semester, the Graduate School and the Program chair
will decide whether to dismiss the student or to allow the continuation of probation. If at the end of the second semester the
grade point average is still below 3.0, the student may be advised to withdraw or face dismissal. Students who earn a grade
point average of 2.0 or less during their first semester of residence are subject to dismissal at the end of that semester.
Accumulation of three U grades in research courses can lead to dismissal.
Student Grievances and Appeals
Students who believe their academic performance has not been judged reasonably or fairly, or who believe their intellectual contributions have not been fairly acknowledged, should discuss their concerns with the director of graduate studies in their program or, as necessary, the Program Director. If the student’s concerns cannot be resolved at the program or departmental level, the student may then request a further review of the issues in question by the associate dean for graduate studies or similar official in their school dean’s office. The student may appeal the outcome of the school-level review to the Graduate School.

Credit
Courses not listed in this catalog that are numbered in the 200s and 300s may be taken for credit by graduate students on the recommendation and consent of the faculty adviser and the director of graduate studies, unless some limit is noted in the description. Not all courses offered by various divisions of the university have been approved by the Graduate Faculty for graduate credit. In these cases, students should complete a “Request for Graduate Credit” form. In arranging schedules, students should consult their advisers and carefully check the Graduate School catalog for approved courses.

Students may register for graduate courses or other courses in the university on a non-credit basis—either to fulfill their own interests or to meet certain prerequisites and requirements. The designation “no-credit” presupposes the student’s participation in the course, including written assignments and examinations. Grades are received and recorded in no-credit courses and tuition is billed at the regular hourly rate.

Transfer Credit
Graduate credit may be transferred from graduate schools in accredited institutions. Students should not assume that all graduate credit earned at other institutions will be transferred. Transfer is made on the recommendation of the director of graduate studies or Director of the Program and approval of the Graduate School.

Only those hours in which the student has achieved the grade B or its equivalent will be considered for transfer. Grades earned on transferred credit do not affect the student’s Graduate School average unless such courses are to be counted as didactic hours.

A maximum of 48 semester hours of transfer credit may, in very special cases, be applied toward the Ph.D. (See requirements for the Ph.D. degree elsewhere in this handbook.)

Students who want to transfer to the Graduate School from professional degree programs offered by other schools at Vanderbilt must submit a formal application for admission and are expected to do so not later than the end of their first year of graduate-level studies at Vanderbilt.

The Graduate School does not transfer courses taken by students while registered in the university’s Division of Unclassified Studies, no matter what the level of the course.

Leave of Absence
The Graduate School requires continuous registration except for summer sessions. Students who want to interrupt their graduate study must petition the Program, who on their behalf apply to the Graduate School for an authorized leave of absence. Leave of absence is granted for a maximum of one year. Those without authorized leave who do not register are dismissed from the Graduate School and are not considered students. If they want to resume graduate study at Vanderbilt, they must petition for reinstatement.

Withdrawal
Students who intend to withdraw from the university should inform the Program, who then informs the Graduate School in writing. Improper notification may result in academic and financial penalties.

Credit for Graduate Courses Taken as an Undergraduate
A qualified Vanderbilt University senior undergraduate may enroll in graduate courses and receive credit which, upon the student’s admission to the Graduate School, may be applicable toward a graduate degree. Undergraduate seniors interested in this option should review the regulations appearing in the Undergraduate Catalog and consult their advisers and the Graduate School. Undergraduates should note that those wanting to take 300-level courses, whether under this option or not, must obtain the written approval of their academic adviser, the instructor of the course, and the Graduate School.
In certain special cases, credit may be transferred for graduate-level course work completed during undergraduate degree studies by a student at another accredited institution. The course hours must be in excess of the minimum required for the undergraduate degree and the course(s) must not be a required part of the undergraduate degree or major. Requests for such transfer of credit must be carefully justified by the student’s major department and approved by the Graduate School.

**Commencement**
The university holds its annual Commencement ceremony following the spring semester. Degree candidates must have completed successfully all curriculum requirements and have passed all prescribed examinations by the published deadlines to be allowed to participate in the ceremony. A student completing degree requirements in the summer or fall semester will be invited to participate in Commencement the following May; however, the semester in which the degree was actually earned will be the one recorded on the diploma and the student’s permanent record. Financially clear students unable to participate in the graduation ceremony will receive their diplomas by mail.
Part of becoming a full-fledged member of the functional scientific research community, is understanding the boundaries of ethics, and staying firmly within them. The Neuroscience Graduate Program is designed to provide you with numerous opportunities to learn, ponder, and discuss the many ethical issues that undergird proper scientific conduct. We take very seriously not only that you are educated in ethics, but that the practices of all scientists, faculty, staff, and trainees strive for and attain the highest ethical standards.

All graduate students in the medical and biological sciences are required by Vanderbilt and its funding agencies to undergo training in Responsible Conduct of Research in May of their first year. This 1-day session (IGP 303) is held by the Biomedical Research Education and Training (BRET) office at a local YMCA. The program is designed to heighten awareness of scientists and trainees in regards to ethical issues and dilemmas, and to provide strategies for dealing with issues associated with responsible conduct. Examples of some of the topics covered in this retreat include:

- institutional and NIH policies regarding scientific misconduct and conflicts of interest
- ethical considerations for research involving human and animal subjects
- data management, record keeping, and intellectual property
- responsible authorship and review of scientific publications and grants

During the retreat, formal lectures are complemented by small group discussions and case study analyses. Some of these materials are derived from *Scientific Integrity: An Introductory Text with Cases* by Francis L. Macrina, American Society for Microbiology; 2nd edition, January 15, 2000.

Attendance at the retreat is mandatory for first-year graduate students in the Neuroscience Graduate Program. Students in the Medical Scientist Training Program (MSTP) can choose to attend at any time during their first three years, but no later than the first year of the graduate phase of their training. Successful completion of the program is obligatory for graduation, and is charted on the student transcript through the Graduate School. This RCR retreat fulfills the NIH training grant requirement for instruction in Responsible Conduct of Research ([http://grants.nih.gov/grants/guide/notice-files/not92-236.html](http://grants.nih.gov/grants/guide/notice-files/not92-236.html)) and is open to any member of the Vanderbilt University scientific community who wishes to participate. In addition, the BRET office makes available to all Vanderbilt scientists and trainees a copy of the Office of Research Integrity’s “Introduction to the Responsible Conduct of Research.” This document is also on the BRET website at [http://bret.mc.vanderbilt.edu/bret/php_files/rcr.php](http://bret.mc.vanderbilt.edu/bret/php_files/rcr.php).

In addition to this general biomedically-oriented RCR offering, the Neuroscience Graduate Program has elements within the program curriculum that both supplement and expand this training. Neuroscience Discussions (NURO 325), a required course for all program students, also has several sessions dedicated to responsible conduct. These discussions focus on issues specific to neuroscience research, such as challenge tests and confidentiality issues in psychiatric populations, informed consent in neurodevelopmentally disabled individuals, and safety issues associated with neuroimaging research. In addition, the association between academia and industry as it relates to the research endeavor is discussed at length with program students, both during this RCR-related coursework as well as in sessions focused on career options. Finally, complementing these formal sessions, several sessions are devoted to more informal student-directed discussions. In keeping with new RCR guidelines, the program now holds sessions devoted to responsible conduct during the entire duration of a trainee’s time in our graduate program. It is the philosophy of our training program that the most important way to teach ethical behavior is by example. Our training faculty adhere to the highest ethical standards in their research, and Vanderbilt University has formal committees and processes established to evaluate and oversee situations that represent potential breeches of research ethics.

Documentation of RCR-related activities is critical during the student’s tenure in the Neuroscience Graduate Program, and every effort should be made to note completion of or participation in these activities in the student’s committee meeting updates. This should include a general description of the topic and when the activity took place.

If the student has any concerns about proper conduct issues, s/he should not hesitate to discuss these with Neuroscience Graduate Program officers, particularly the Director of Graduate Studies.
One Program - Two Areas of Concentration

The Vanderbilt Brain Institute’s Neuroscience Graduate Program offers broad-based training in the full range of modern neuroscience research. Within the program there are two areas of concentration - the Cellular & Molecular concentration stresses genetic, molecular and cellular approaches to understanding brain function and disease, while the Cognitive & Systems concentration emphasizes neural systems and global brain function.

Cellular and Molecular Concentration   This path provides doctoral training with emphasis on neurogenetics and genetic dissection of neural development, molecular aspects of synapse formation and plasticity, structure and regulation of ion channels and transporters, targeting and signal transduction, psychotropic drug action, the molecular basis of neuropsychiatric and neurodegenerative disorders, and targeted gene disruption in transgenic animals to ascertain the function of neural genes and establish disease models. Applications from students within this area of interest are accepted through the Application Page of the Interdisciplinary Graduate Program in Biomedical Sciences (IGP), the Application Page of the Neuroscience Graduate Program (NGP) or the Medical Scientist Training Program (MSTP) (applied through the American Medical College Application Service – AMCAS).

Cognitive and Systems Concentration   This path provides doctoral training with emphasis on cognitive neuroscience, sensory-motor systems, neuroimaging, neural development, synaptic plasticity, neurobiological basis of neuropsychiatric and neurodegenerative disorders, and targeted gene disruption in transgenic animals to ascertain the function of neural genes and establish disease models. Applications from students with these interests are accepted via the Application Page of the Neuroscience Graduate Program (NGP) or the Medical Scientist Training Program (MSTP) (applied through the American Medical College Application Service – AMCAS).

IGP vs. NGP Entry   Both entry paths converge on a similar broad-based curriculum in fundamental neuroscience. The principal difference is that students in the IGP pathway begin their first year with a general course in graduate level cellular and molecular biology (BioRegulation) and then begin specialized courses in Neuroscience in the spring semester of their first year, whereas NGP students begin specialized Neuroscience courses at the outset.
Becoming a Student in the Neuroscience Graduate Program
http://braininstitute.vanderbilt.edu/graduate/index.php

Douglas G. McMahon, Ph.D.
Director of Graduate Studies

Goals and Philosophies of the Program
Neuroscience, the study of the nervous system, is a highly integrated discipline and one of the most rapidly advancing areas of modern science. The nervous system controls and coordinates all body functions from simple reflexes to highly complex, motivated behaviors. Neuroscience draws upon knowledge developed in many domains, including anatomy, biochemistry, biology, genetics, pharmacology, and psychology, and represents inquiries along a continuum from structural biology of signaling molecules to the understanding of how neural networks give rise to thought and emotion. Consequently, to advance understanding of brain function, scientists in this challenging field must cross boundaries dividing traditional specialties and employ multidisciplinary approaches.

Progress in identifying, visualizing and manipulating key determinants of neural development, signaling and plasticity is driven by and inextricably linked to advances in our understanding of nervous system structure and function. The distinguished training faculty of the Vanderbilt Brain Institute Neuroscience Graduate Program at Vanderbilt University reflects the multidisciplinary nature of modern neurobiological inquiry, and is drawn from diverse fields such as Psychology, Biochemistry, Molecular Physiology, and Pharmacology.

Vanderbilt’s Neuroscience Graduate Program prepares each student to make significant contributions in neuroscience and fosters development from trainee to independent research scientist and educator. This is achieved by combining sound training in the fundamentals of neural science with more specialized training that focuses on the integration of this knowledge base into a study of nervous system function and disease. Students have the option of a curriculum and research program that emphasizes either Cellular & Molecular or Cognitive and Systems neuroscience, preparing each trainee for a future in which neuroscientists must be able to make the transition from molecules and cells to neural systems and behavior. The training, which combines rigorous course work with opportunities for state-of-the-art research, is designed to prepare graduates for a future in which neuroscientists must be able to make the transition from molecules and cells to neural systems and behavior.

Program Requirements

Summary of Requirements
A minimum of 72 total hours of graduate credit are required for the Neuroscience Ph.D. degree. In most cases course work will be completed during the first two years. At the end of the second year, a Ph.D. Qualifying Examination must be satisfactorily completed for the student to then be admitted into doctoral candidacy for a Ph.D. degree in neuroscience. If needed, remaining course electives may be taken following the qualifying Examination. After a student completes the qualifying process, the student’s effort is largely directed towards completing her/his dissertation project. The average time to degree in our program is just over 5 years.

In addition to the academic requirements described above, every student is required to complete Teaching Apprenticeship/Assistantship in at least one course during graduate training. Also, students are required to attend the bi-weekly Neuroscience Graduate Program Seminar series, bi-weekly Research Forum meetings, and the Annual Neuroscience Retreat. Students who are in their third year at Vanderbilt or beyond are required to do either a poster or oral presentation at retreat.
**Cellular & Molecular Neuroscience Concentration** (admission through the NGP, IGP or MSTP)

**Didactic Requirements**

While the Graduate School requires a minimum of 24 didactic credits to graduate, the Neuroscience Graduate Program requirement is more rigorous. Graduate students in Cellular & Molecular neuroscience are required to take a minimum of 33 hours of coursework by the time they are ready for qualifying exams in the summer and fall of their second to third years. This requirement may seem daunting, but it is because of our rigorous training that our program is considered one of the top in the nation. Besides the 33 credits required by the curriculum, those students seeking further instruction in other topics have the option to take additional electives, up to a total of 12 credits (including required courses) per semester.

**Required courses in Cellular & Molecular Neuroscience include:**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits, Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGP 300A-B</td>
<td>Bioregulation I &amp; II</td>
<td>9, Patton</td>
</tr>
<tr>
<td>NURO 325</td>
<td>Neuroscience Discussions I and II</td>
<td>2, Wallace/Konradi</td>
</tr>
<tr>
<td>NURO 320</td>
<td>Neuroscience Research Forum</td>
<td>0, McMahon</td>
</tr>
<tr>
<td>NURO 345</td>
<td>Molecular and Cellular Neuroscience</td>
<td>4, Carter/Currie</td>
</tr>
<tr>
<td>NURO 352</td>
<td>Seminar in Neuroscience</td>
<td>2, McMahon</td>
</tr>
<tr>
<td>NSC 274</td>
<td>Neuroanatomy: The Human Brain</td>
<td>3, Roe</td>
</tr>
<tr>
<td>NURO 332</td>
<td>Experimental Statistics Short Course</td>
<td>1, Airey</td>
</tr>
<tr>
<td>NURO 340</td>
<td>Systems Neuroscience</td>
<td>4, Casagrande</td>
</tr>
<tr>
<td>NURO 330</td>
<td>Cognitive Neuroscience</td>
<td>3, Marois</td>
</tr>
<tr>
<td>NURO 346</td>
<td>Advanced Molecular Neurobiology</td>
<td>3, Emeson</td>
</tr>
<tr>
<td>NURO 324</td>
<td>Advanced Neurophysiology</td>
<td>3, Galli</td>
</tr>
<tr>
<td>NURO 302</td>
<td>Techniques &amp; Preparations (Rotations)</td>
<td>3, Patton</td>
</tr>
<tr>
<td>Variable</td>
<td>Electives</td>
<td>3, Faculty</td>
</tr>
</tbody>
</table>

**Cognitive & Systems Neuroscience Concentration** (admission through the NGP or MSTP)

**Didactic Requirements**

Graduate students in Cognitive & Systems neuroscience are required to take a minimum of 27 hours of coursework by the time they are ready for qualifying exams in the summer and fall of their second to third years.

**Required courses in Cognitive & Systems Neuroscience include:**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits, Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURO 325</td>
<td>Neuroscience Discussions I and II</td>
<td>2, Wallace/Konradi</td>
</tr>
<tr>
<td>NURO 320</td>
<td>Neuroscience Research Forum</td>
<td>0, McMahon</td>
</tr>
<tr>
<td>NURO 340</td>
<td>Systems Neuroscience</td>
<td>4, Casagrande</td>
</tr>
<tr>
<td>NURO 352</td>
<td>Seminar in Neuroscience</td>
<td>2, McMahon</td>
</tr>
<tr>
<td>NSC 274</td>
<td>Neuroanatomy: The Human Brain</td>
<td>3, Roe</td>
</tr>
<tr>
<td>NURO 330</td>
<td>Cognitive Neuroscience</td>
<td>3, Marois</td>
</tr>
<tr>
<td>NURO 345</td>
<td>Molecular and Cellular Neuroscience</td>
<td>4, Carter/Currie</td>
</tr>
<tr>
<td>SPED 3017</td>
<td>Experimental Analysis of Behavior</td>
<td>3, Kennedy</td>
</tr>
<tr>
<td>NURO 302</td>
<td>Techniques &amp; Preparations (Rotations)</td>
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</tr>
<tr>
<td>PSY 310</td>
<td>Statistical Inference</td>
<td>3, Steiger</td>
</tr>
<tr>
<td>Variable</td>
<td>Electives</td>
<td>3, Faculty</td>
</tr>
</tbody>
</table>
All Students - Third year

* FALL: Phases I - II Qualifying Examination; Research Forum; Research Hours.
* SPRING: Research Forum; Research Hours.
* SUMMER: Research Hours.

Fourth and Fifth years: Successful completion of Teaching Apprenticeship, Research Forum and Neuroscience Graduate Seminars; thesis Research and Defense of Thesis.

A note on the Medical Scientist Training Program (MSTP)

Because of overlap occurring between certain medical school and graduate school courses, students in the MSTP are granted more leeway in their course selection options. For example, MSTP students are required to take the MSTP Seminar Series as a course (IGP 310), which would fulfill the NURO 352 requirement of all Neuroscience Graduate Program Students. Other substitutions are the purview of the DGS and the Program Director, and questions regarding curriculum should be directed to them. Unlike students in the general graduate program, MSTP students are limited to 24 didactic course credits in pursuit of their Ph.D.

Accumulating Credits

72 credit hours are required to graduate with the Ph.D. degree from Vanderbilt University. This includes the required 33 credits from the Cellular & Molecular didactic course work or 27 credits from the Cognitive and Systems didactic coursework; MSTP students are limited to 24 total didactic credits. The hours of course work may be increased (but not decreased), with a corresponding reduction in research hours. The required neuroscience courses are the same for both IGP and MSTP students who have entered the Neuroscience Graduate Program’s Molecular and Cellular concentration but, for MSTP students, electives will be determined for each individual based on research interests and courses completed in the first two years of medical study. MSTP students must take the MSTP Seminar course (IGP 310) until all 72 graduate hours are earned. All graduate students who have completed their required 72 credit hours will be required to register for NURO 399 (Ph.D. Dissertation Research) for 0 credits until they graduate.
NURO 302. Techniques and Preparations. [Also listed as IGP 302] Laboratory rotations undertaken by Cognitive & Systems Track students that culminate in the selection of a dissertation adviser. FALL, SPRING. [0-6] Faculty.

NURO 320. Neuroscience Research Forum. Required of all students, and second-year students are required to take this course for credit. Students make oral presentations and are evaluated based on the clarity of the presentation and visual aids, as well as the ability of the presenter to answer questions. The course meets every other week for one hour with two students presenting at each session. FALL, SPRING. [0] McMahon.

NURO 324. Advanced Neurophysiology. [Also listed as Molecular Physiology and Biophysics 323 and Pharmacology 323] This class is a tutorial in methods for recording electrical signals in neurons. We will begin with a crash course on ion channels and transporters, spending a significant proportion of class time on discussion of recent primary research papers. In the latter part of the semester, we will move on to live demonstrations and personal training in the details of electrophysiological recording methods in several preparations. By the end of the course, students will be prepared to perform electrophysiological experiments as part of their dissertation research. SPRING. [3] Galli.

NURO 325. Neuroscience Discussions. This two-semester course provides discussions on a broad range of neuroscience topics, ranging from reviews of historical concepts and individuals in neuroscience to science journalism. Other topics include scientific ethics, science policy, good grantsmanship, and communication skills. FALL, SPRING. [1-1] Wallace, Konradi, and Woodward.

NURO 327. Graduate Neuroanatomy. An intensive course on the structure and function of the brain designed specifically for neuroscience graduate students. The course is centered around a large lab portion supplemented by lectures. The course is geared towards hands-on experience and is intended to foster the ability to identify and characterize important structures and subdivisions of the rodent and primate brain using gross, histological and histochemical methods. Histological identification of specific brain structures using different types of stains, markers, and connectional methodologies will be covered. The emphasis will range from macroscopic analyses of brain structures and pathways to the cellular composition and molecular characteristics of specific brains regions, and will employ a number of modern neuroanatomical techniques. In addition, neuropathological materials will be used. The course will equip students with practical knowledge of neuroanatomy as well as modern neuroanatomical methods an approaches, which will be useful in their professional career in the neurosciences. FALL [3] Gurevich.

NURO 330. Cognitive Neuroscience. This course provides a broad understanding of the state of our knowledge in cognitive neuroscience. The emphasis is on the findings and concepts in the major branches of cognitive neuroscience, rather than techniques (although these will be discussed). The level of analysis will focus on human and non-human primate systems. Prerequisite: an introductory-level undergraduate course in neuroscience or physiological psychology. Basic knowledge of experimental cognitive psychology is desirable but not necessary. FALL. [3] Marois.

NURO 331. Mammalian Developmental Neurobiology. This seminar course emphasizes classic and cutting-edge research in mammalian brain development, with a particular emphasis on the forebrain. It is also intended to introduce the students to modern techniques used to examine the generation of proper brain architecture and connectivity. Prerequisite: NURO 345 SPRING [2] Stanwood.

NURO 332. Experimental Statistics Short Course. The goal of this course is to insure basic proficiency in statistical concepts, methods for analysis of experimental data, and enhance statistical communication skills. Core concepts to be discussed are: (1) Sources of data variation, data types that lead to different analyses (e.g. parametric vs nonparametric); (2) Variation in samples and populations, real world vs theoretical data distributions; (3) Importance and use of confidence intervals, effect size, power related to experimental design; (4) Meaning of statistical vs functional significance; and (5) Aspects of data analysis pitfalls (e.g., outliers, multiple tests, clustered data). Prerequisite: Permission of faculty. SUMMER [1].
NURO 335. Special Topics in Neuroscience. (Also listed as Cell and Developmental Biology 335 and Psychology 335) Explores basic issues in neuroscience. Possible topics include neural development, neural plasticity, regeneration, organization and function of cortex, sensory systems, motor systems, and research methodology in neuroscience. A new topic is considered each semester. Prerequisite: Neuroscience 323 or equivalent course. FALL. [2] Casagrande.


NURO 342. Seminar in the Neurobiology of Hearing and Multisensory Processes. (Also listed as Hearing and Speech Sciences 342) Study at the doctoral level of the neural processes underlying auditory and multisensory perception. The course will focus on critical readings of recently published findings that emphasize the connection between plasticity, neural systems, and behavior. May be repeated for credit. Prerequisite: consent of instructor. FALL, SPRING. [Variable credit: 1-2] Wallace.

NURO 345. Cellular and Molecular Neuroscience. (Also listed as Cell and Developmental Biology 345, Molecular Physiology and Biophysics 345, Pharmacology 345) This course is a required entry-level course for students in the Cell and Molecular Track of the Neuroscience Graduate Program at Vanderbilt that should be taken in the first graduate school year. It also serves as an elective for medical students and graduate students in a number of other programs. Its goal is to expose students to fundamental concepts and techniques in molecular and cellular neuroscience and provide a theoretical context for experimental analysis of brain function and disease. The course is divided into three modules. Module I: Neural Anatomy and Development provides an overview of the anatomy of the nervous system and neurotransmitters and examines concepts in neural pattern formation, neuronal migration, axon guidance, and synapse formation. Module II: Signaling, Plasticity, and Modulation reviews biophysical and molecular concepts relating to neuronal membrane excitability, secretion, and plasticity. Module III: Neural Diseases and Disease Models focuses on specific brain disorders such as epilepsy, pain disorders, Alzheimer’s disease, depression, and schizophrenia and current models used to investigate their origin and/or treatment. This course combines faculty lecture with discussion of original articles, with an emphasis on fundamental concepts and the elucidation of important research paradigms in the discipline. Faculty and assistants guide students through important research paradigms with a critical analysis of the primary literature in the topic area. Prerequisite: Bioregulation I (IGP 300A) or consent of instructor. SPRING. [4] Currie, Carter, and Staff.

NURO 346. Advanced Molecular Neurobiology. (Also listed as Pharmacology 346) This course examines molecular components and interactions that regulate neuronal development, signaling, and disease. Topics include development of neuronal identity, axonal transport, growth factors and cell death, axon guidance and synapse formation, electrical and chemical transmission, regulation of neuronal excitability and genetic analysis of signaling and neural disorders. Didactic and literature discussions provide students with a sound foundation for understanding the molecular bases underlying the development and function of the nervous system. Prerequisite: Neuroscience 345 or Pharmacology 320, or consent of instructor. SPRING. [3] Emeson and Staff.

NURO 347. The Visual System. (Also listed as Cell and Developmental Biology 347, Psychology 336) An interdisciplinary approach to how humans see and interpret their visual environment. Topics include the structure of the eye and brain (including optics), the physiology of individual cells and groups of cells, machine vision and models of visual function, visual attention, and mechanisms of complex visual perception. Lectures by faculty from Psychology and Cell and Developmental Biology. Graduate students attend one hour discussion section per week in addition to lecture, and turn in a more extensive paper than undergraduates. SPRING. [3] Roe.

NURO 350. Independent Study. Qualified students work with individual faculty members in areas not covered in available courses. Prerequisite: approval by individual faculty member and program director. FALL, SPRING, SUMMER. [Variable credit: 1-3, with total credit limited to 3].

NURO 352. Seminar in Neuroscience. This course is linked to the Neuroscience Graduate Seminar Series, and will focus on several recent publications from the invited speaker in a “journal club” type discussion format. FALL, SPRING [1]. McMahon.
NURO 365. Neurobiology of Disease. The goal of this course is to prepare students for intensive collaborations along the basic-translational clinical continuum. The course is divided into five brain disease areas of focus (modules). In each module, clinical and pathological features, status of clinical research, animal models, and postulated cellular/molecular bases for the disease will be covered. Each module closes with a review of the clinical findings, and patient interviews with an emphasis on the health disparities of the disease, whether biological, social, or both. Five one-hour modules can be taken in any combination and sequence. This course, an elective for Neuroscience majors, is co-taught by Vanderbilt and Meharry faculty. Prerequisite: introductory neuroscience course and consent of instructor. FALL, SPRING. [1-5] Chirwa.

NURO 366. Molecular Basis of Neural Disease. This advanced course covers current concepts and models for neuropsychiatric disorders, including schizophrenia, depression, and autism, as well as Parkinson’s Disease, trinucleotide repeat disorders, and stroke. Didactic presentations will focus on the molecular and genetic bases of these disorders, and will be complemented by presentations of new papers as well as patient interviews when possible. Prerequisite: 345 or consent of instructor. SPRING. [2] Deutch.

NURO 376. Neurogenetics. This advanced course covers Mendelian genetics including relationships between mutational mechanisms and inheritance patterns. Topics highlighting genetics of neurological phenotypes will be discussed. Prerequisite: 345 or consent of instructor. SPRING. [2] Sutcliffe.

NURO 379. Non-Candidate Research. Research prior to entry into candidacy (completion of qualifying examination) and for special non-degree students. [Variable credit: 0-12].


Graduate Courses Outside the Neuroscience Graduate Program (excerpted from The Bulletin of Vanderbilt University: Graduate School 2012/2013)

IGP 300A. Bioregulation I. Fundamental aspects of the utilization of genetic material from DNA to RNA to protein. This includes macromolecular structure and function, cell biology, and the regulation of cell growth. FALL. [6] Patton and Staff.

IGP 300B. Bioregulation II. Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. Includes immunologic defense, endocrine signaling, neuroscience, and molecular aspects of disease. SPRING. [Variable credit: 1-6] Patton and Staff.

IGP 303. Responsible Conduct in Research. Formal lectures and small group discussions on a range of issues encountered in research activities. Included are responsibilities of the investigator and the university to the federal government; scientific misconduct, ethical use of animals in research; ethics of publication, lab management, and grant writing. MAY. [0] Patton and staff.

IGP 310. MSTP Seminar Series. The MSTP Seminar Series is a student-driven course in research guided by faculty preceptors. Formal objectives are: 1. To foster development of critical-thinking skills by appraisal of contemporary scientific literature. 2. To enhance scientific creativity through discussion of experimental approaches and techniques. 3. To develop oral presentation skills. The seminar series is interdisciplinary in scope with topics drawn from all areas of
biomedical research The primary focus is on cutting-edge, discovery-based, and hypothesis-driven science. Students in the MSTP have primary responsibility for choosing the manuscripts to be presented as centerpieces of the seminars. More advanced students are expected to play a key role in mentoring before, during, and after junior student presentations. MSTP students only. Other students with specific permission of the Course Director. FALL, SPRING [1] Dermody.

**BCHM-GS 336. Biochemical Toxicology and Carcinogenesis.** (Also listed as Chemistry 336) Chemical and biological aspects of toxicology and carcinogenesis, including basic principles and mechanisms, metabolism and enzymology, cellular biology, chemistry of reactive intermediates, and a survey of several classes of environmentally important compounds and drugs. Prerequisite: organic chemistry and general biochemistry. Three lectures per week. FALL. [3] Armstrong, Guengerich, Liebler, Marnett, Pietenpol, Porter, Stone.


**BSCI 240. Developmental Biology.** Genetic, molecular, and cellular mechanisms underlying the development of vertebrate animals with emphasis on the principles of human development. Specification of embryonic polarity, generation, and patterning of germ layers; sex determination, cardiovascular development, neural tube morphogenesis and differentiation, embryonic and adult stem cells in homeostasis and regeneration. [3].


**BSCI 254. Neurobiology of Behavior.** Nerve cell interactions in neuronal networks of the central nervous system of animals and their impact for regulating behavior. Sensory systems, sensory-motor integration, central processing of information, neuronal-hormonal interactions; and brain anatomy and organization in invertebrates and vertebrates. [3].


**BME 253. Neuromuscular Mechanics and Physiology.** Quantitative characterization of the physiological and mechanical properties of the neuromuscular system. Quantitative models of system components. Applications to fatigue, aging and development, injury and repair, and congenital and acquired diseases. Prerequisite: BME 251 and 101. SPRING. [3].

**BME 258. Foundations of Medical Imaging.** Physics and engineering of image formation by different modalities used for medical applications. Concepts common to different imaging modalities and limits of physical phenomena. Mathematical concepts of image formation and analysis; techniques for recording images using ionizing radiation (including CT), ultrasound, magnetic resonance, and nuclear (including SPECT and PET). Methods of evaluating image quality. Prerequisite: PHYS 116b, 118b, Math 196. Credit offered for only one of BME 258 and PHYS 228. SPRING. [3].

**BME 331. Neuroimaging.** Applications of noninvasive imaging techniques including MRI, fMRI, optical, EEG, and PET to the study of neural systems. Emphasis on the human brain, with a focus on current scientific literature. Prerequisites: BME 258 or BME 302b/304b/304c or PHYS 228. FALL. (Offered alternate years) [3].

**BIOS 301. Introduction to Statistical Computing.** This course is designed for students who seek to develop skills in statistical computing. Students will learn how to use R and STATA for data management, database querying, reporting generating, data presentation, and data tabulation and summarization. Topics will include organization and documentation of data, input and export of data sets, methods of cleaning data, tabulation and graphing of data, programming capabilities, and an introduction to simulations and bootstrapping. Students will also be introduced to LaTeX and Sweave for report writing. Students will also be briefly introduced to SAS and SQL programming. FALL. [2] Staff.

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BIOS 311. Principles of Modern Biostatistics. This is the first in a two-course series designed for students who seek to develop skills in modern biostatistical reasoning and data analysis. Students learn the statistical principles that govern the analysis of data in the health sciences and biomedical research. Traditional probabilistic concepts and modern computational techniques will be integrated with applied examples from biomedical and health sciences. Statistical computing uses software packages STATA and R; prior familiarity with these packages is helpful but not required. Topics include: types of data, tabulation of data, methods of exploring and presenting data, graphing techniques (boxplots, q-q plots, histograms), indirect and direct standardization of rates, axioms of probability, probability distributions and their moments, properties of estimators, the Law of Large numbers, the Central Limit Theorem, theory of confidence intervals and hypothesis testing (one sample and two sample problems), paradigms of statistical inference (Frequentist, Bayesian, Likelihood), introduction to non-parametric techniques, bootstrapping and simulation, sample size calculations and basic study design issues. One hour lab required; Students are required to take 311L concurrently. Prerequisite: Calculus I. FALL. [3] Staff.

BIOS 311L. Principles of Modern Biostatistics Lab. This is a discussion section/lab for Principles of Modern Biostatistics. Students will review relevant theory and work on applications as a group. Computing solutions and extensions will be emphasized. Students are required to take 311 concurrently. FALL [1] Staff.

BIOS 312. Modern Regression Analysis. This is the second in a two-course series designed for students who seek to develop skills in modern biostatistical reasoning and data analysis. Students learn modern regression analysis and modeling building techniques from an applied perspective. Theoretical principles will be demonstrated with real-world examples from biomedical studies. This course requires substantial statistical computing in software packages STATA and R; familiarity with at least one of these packages is required. The course covers regression modeling for continuous outcomes, including simple linear regression, multiple linear regression, and analysis of variance with one-way, two-way, three-way, and analysis of covariance models. This is a brief introduction to models for binary outcomes (logistic models), ordinal outcomes (proportional odds models), count outcomes (Poisson/negative binomial models), and time to event outcomes (Kaplan-Meier curves, Cox proportional hazard modeling). Incorporated into the presentation of these models are subtopic topics such as regression diagnostics, nonparametric regression, splines, data reduction techniques, model validation, parametric bootstrapping, and a very brief introduction to methods for handling missing data. One hour lab required. Students are required to take 312L concurrently. Prerequisite: Biostatistics 311 or equivalent; familiarity with STATA and R software packages. SPRING. [3] Staff.

BIOS 312L. Modern Regression Analysis Lab. This is a discussion section/lab for Modern Regression Analysis. Students will review relevant theory and work on applications as a group. Computing solutions and extensions will be emphasized. Students are required to take 312 concurrently. SPRING [1]

CBIO-GS 310. Cell Biology. This is a graduate-level course with three major goals pivotal for success as a graduate student: (1) To provide solid foundational knowledge of cell biology, (2) To learn to think critically about experimental design and interpretation, (3) To learn to communicate effectively, both orally and in writing. The class features faculty from the Department of Cell and Developmental Biology and emphasizes fundamental cell processes such as migration, mitosis, proliferation, and death. Critical signaling pathways are reviewed in relation to cell biological processes essential for developmental biology. Weekly student presentations help develop oral communication skills and weekly writing assignments hone writing skills, helping students learn classical and cutting-edge techniques while improving their ability to read and synthesize the literature. Final paper assignment is designed to help students learn to develop and design feasible experiments to test a strong hypothesis. Prerequisite: IGP curriculum, the entire Bioregulation class. FALL. [4] Labosky.

CBIO-GS 312. Introduction to Developmental Biology. This combined lecture and laboratory course will present students with the basics in the analysis of standard animal models used in modern developmental biology. Central concepts in development will be presented in lecture while the student will gain “hands on” training in the growth and care of embryos and analysis of embryonic development in model organisms. Standard methods of analysis (e.g. basic microscopy/morphological analysis, immunolabeling, time-lapse imaging, embryo microinjection) will be presented. Prerequisite: IGP Curriculum. Tuesday/Thursday; Summer Session. [3] Bader, Jessen.

CBIO-GS 349. Genetics of Model Organisms. (Also listed as Human Genetics 349, Molecular Physiology and Biophysics 349) Basic genetic principles across a broad range of organisms (yeast, C. elegans, Drosophila melanogaster, plants, mouse, zebrafish) that are used in genetic analyses to investigate molecular pathways of interest for human disease will
be presented. This course will provide students with in-depth terminology and understanding of the advantages, applications, and approaches specific to each organism. Genomic and bioinformatics tools that facilitate genetic analysis in each species will be emphasized. Specific examples of how each model organism has successfully contributed to elucidation of a human disease gene, pathway, or genetic principle will be presented. Course combines faculty lectures with student presentation and discussion of original articles to emphasize the uniqueness of each model system. Prerequisite: one statistics course at the upper undergraduate level or higher and Fundamentals of Genetic Analysis (MPB 385), or permission of instructor. Offered every other year. SPRING. [3] Southard-Smith and Staff.

EECE 357. Advanced Image Processing. (Also listed as CS 357) Techniques of image processing. Topics include image formation, digitization, linear shift-invariant processing, feature detection, and motion. Prerequisite: Math 175; programming experience. FALL. [3]


HRSP 300. Neurology of Speech and Language. The structure and function of the nervous system, with emphasis on the neural mechanisms of speech and language. Neurologic conditions producing speech and language disorders are surveyed. FALL. [3] Webb. (Also listed as SLP 5300).

HRSP 334. Seminar in Neurogenic Communication Disorders. Research literature on the relationship between brain and speech-language performance, emphasizing current methodology for studying neurological speech and language disorders. Prerequisite: 300 or 331 or consent of instructor. FALL. [2]

HGEN 340. Human Genetics I. (Also listed as Molecular Physiology and Biophysics 340) Designed to cover background and latest advances in human molecular genetics. Topics will include an overview and in-depth look at molecular genetics including DNA, RNA, and chromosome basics. Gene structure and transcriptional processing. Mutational mechanisms, biochemical genetics (gene defects in biochemical pathways). Topics will be discussed with use of real-world examples and relevance to human research. FALL. [3] Mortlock and Staff.

HGEN 341. Human Genetics II. (Also listed as Molecular Physiology and Biophysics 341) This course will cover the statistical, population, and analytical aspects of modern human genetics research. Topics to be covered include human population genetics, quantitative genetics, disease gene discovery (emphasizing design, statistical and molecular techniques), linkage and association analyses, computational genetics, and evolutionary genetics. Clinical examples, subject ascertainment, and study design will also be emphasized. Students must have a strong understanding of Mendelian genetics and basic biostatistics. Prerequisite: consent of instructor. SPRING. [3] Haines and Staff.

PHAR-GS 320. Targets, Systems, and Drug Action. Introduction to human physiology is integrated with the pathophysiology, pathological manifestations, and therapeutic interventions. Lectures and laboratories emphasize the molecular and cellular underpinnings of normal organ function and disease. Mechanisms of drug action are discussed in a systemic fashion and supported by guided readings on drug discovery and design. Paradigm shifting experiments will be discussed to illustrate clarity of thinking, how focused experimental strategies lead to discovery, and potential difficulties in interpretation of experimental results. FALL, SPRING. [1-10] Barnett, Brash.

PHAR-GS 324. Receptor Theory and Signal Transduction. Structure and function of cell-surface receptors and the molecular bases by which they activate cellular function. Topics include receptor identification; quantitation of simple and complex binding phenomena; molecular bases for receptor coupling to GTP-binding proteins; the structure and function of ligand-operated ion channels, receptor-tyrosine kinases and receptor-induced signal transduction cascades receptors as oncogenes and proto-oncogenes. SUMMER. [1-3] A. Brown.

PSY 301a. Advanced General Psychology. Physiological psychology, perception and sensation, learning, complex processes, developmental, personality, social psychology, and psychopathology. Participation in various sections determined by each student’s background and career interests. [3].
PSY 304b. Quantitative Methods and Experimental Design. Principles and methods for the design and analysis of experiments and for the investigation of individual differences. Principles of experimental design and descriptive and inferential statistics. [3].

PSY 310. Research Methods in Clinical Psychology. Major methodological and quantitative issues in clinical psychology, including statistical significance testing and its alternatives; threats to internal and external validity; psychometric theory; quantitative approaches to classification; behavioral, genetic, and psychophysiological methods; animal models; analysis of change, mediation, and moderation. [3]. Steiger.

PSY 316. Brain Imaging Methods. Principles and methods used in human neuroimaging, with emphasis on functional magnetic resonance imaging (fMRI). [3].


PSY-GS 311. Experimental Design. Application of statistical concepts and inferential techniques to the design and analysis of experiments in the behavioral sciences. Advanced procedures for analysis of variance and analysis of covariance. Prerequisite: 310P or equivalent. [3].

PSY-GS 350. Human Learning. Overview of the major experimental approaches to human learning, with an emphasis on the limitations/contributions of each paradigm. [3].


SPED 3017. Experimental Analysis of Behavior. Overview of basic behavioral processes. Presents information relating to human and nonhuman learning with a focus on the experimental analysis of behavior. Topics covered include environmental feedback mechanisms, schedules of reinforcement, establishing operations, multipercent performances, discriminative stimulus control, stimulus equivalence, rule-governed behavior, behavioral pharmacology, and remembering/forgetting. The course also focuses on research methodologies and the critical analysis of research. Students apply their skills using computer based simulations of laboratory experiments. [3].

Laboratory Rotations and Advisor Selection

During their first year of matriculation, each student is required to perform experimental work in different laboratories. Students entering through the IGP (Cellular & Molecular Track) will supply the IGP Director with a list of approved faculty with whom that student would like to rotate. The selection, however, is ultimately Dr. Patton’s. Students in the IGP that are interested in neuroscience are encouraged to perform their research rotations with training faculty of the Neuroscience Graduate Program. Once an IGP student has selected a faculty advisor, the student and advisor must submit a formal request for admission into the Neuroscience Graduate Program. The first step is to make an appointment with the DGS, who will explain the requirements and expectations of the Program and determine the student’s interest and commitment to a neuroscience career. A subcommittee of the Neuroscience Steering Committee evaluates candidates and selects who will be admitted.

Students in the Cognitive & Systems track perform laboratory rotations in their first year under the guidance of the DGS. Students should take care to diligently evaluate the research programs of Neuroscience training faculty, and rotate in the labs of those that they deem most compatible with their goals. These laboratory rotations provide an early opportunity for research experience and an introduction to some of the many techniques used to investigate neuroscience problems. Of greater importance is that the laboratory rotations familiarize students with the science and working environments of potential dissertation advisors. Typically, each rotation lasts for one semester and the student chooses a mentor by the end of the spring semester of first year. A third optional rotation can be performed in the summer between the first and second years, if necessary or desirable. It is incumbent on all Cognitive and Systems students to have arranged for a faculty dissertation mentor, in consultation with the DGS and Director, before the beginning of fall semester of their second year. Failure to do so will be considered a lack of sufficient progress. To receive academic credit for their rotations, students should register for NURO-302 on the section number for their rotation faculty member. At the beginning of each semester, each student should email the DGS with their mentor selection.
Grades

The scale of grades in the Graduate School ranges from A (4.0) to C (2.0) to F (0). Continued financial support and good standing in the Neuroscience Graduate Program requires course grades of at least a B (3.0) average and taking a full course load (at least 8 hours) each semester. A student who fails to earn this minimum grade point average or who earns a C or lower in any course will be placed on academic probation. If a second grade of C or less is earned by a student, he/she is subject to dismissal from the Neuroscience Graduate Program.

A special note concerning grades: research grades (NURO 379 and 399) are now on a “Satisfactory/Unsatisfactory” system (S or U). A “U” is considered a sign that a student is not performing up to the expectations of her/his dissertation advisor. Thus, if a student earns a “U” in research, the student should speak to his/her dissertation advisor and discover where his/her research performance is not meeting expectations. The accumulation of three (3) U grades over the course of study will lead to dismissal from the Program and the Graduate School.

Financial Support

Stipends and tuition allowances are awarded to students through multiple mechanisms. Stipend levels are set by the University in consultation with the department chairs. Stipends for the 2012-2013 academic year are $26,500.

• Cognitive & Systems Concentration Students are supported by one of a variety of mechanisms for their first year. Some students on this track may be eligible for a second year of support from these means. Once training grant support and other competitive awards are completed, the financial support is the responsibility of the dissertation advisor. Financial support may be withdrawn at any time from a student whose academic performance is deemed inadequate. Medical Scientists Training Program (MSTP) Students, who have completed the first two years of Medical School, will be supported for one additional year on MSTP/Medical School Funds. The financial support is then the responsibility of the dissertation advisor. Financial support may be withdrawn from a student whose performance is deemed inadequate.

• Cellular & Molecular Concentration: The first two semesters of support are provided by the BRET (Biomedical Research Education and Training) office, during which time students are enrolled in the common IGP curriculum. Students are then eligible to compete for positions on various training grants and in the Vanderbilt Brain Institute. Additional sources of support could include faculty research grants, faculty non-federal funds and individual fellowships from extramural sources. Once training grant support and other competitive awards are completed, the financial support is the responsibility of the dissertation advisor. Financial support may be withdrawn at any time from a student whose academic performance is deemed inadequate. MSTP Students’ first two years of support (years 1 and 2 of Medical School) are provided by the Medical School. Once a student has chosen a dissertation advisor, the responsibility for support typically falls on to the chosen laboratory. However, in a number of cases the student can be supported by a training grant or institutional sources. Decisions as to this support are generally based on merit (such as prior academic performance or research), with the typical duration of support being two years.

Competitive topping-up awards include Harold Sterling Vanderbilt Graduate Scholarships and the Vanderbilt’s Dean’s Fellows program. The latter provides competitive fellowships targeted to individuals underrepresented in the basic sciences. The Milton T. Bush Scholars Program was established for general trainee related expenses. Financial support may be withdrawn from a student whose performance is deemed inadequate.

Stipend funds are available—either through the recommended direct deposit method or by actual check—on the last working day of the month. Checks are available for pickup in 1205 MRB III with the appropriate signature. Tuition and fees are paid from various sources by Mrs. Michael-Woolman, or in some cases, by the student:

• Tuition: All tuition expenses for approved courses will be covered. Tuition will be directly paid for those students in their first two years of training. There are other options for payment of tuition thereafter. Mary Michael-Woolman will discuss with the students on a case-by-case basis.
• Health Insurance: All graduate students, unless they sign an insurance waiver, are covered by health insurance through Vanderbilt University. The current health insurance fee is $2,142. If insurance is waived, please notify Mary Michael-Woolman each year. Coverage runs from August 12 of one year to August 12 of the next. This premium is covered by the stipend/payroll funding sources. Spouses and other dependents can be covered by this insurance but guidelines for paying for such coverage vary and payment of the premium for this additional coverage is the responsibility of the student. For additional information about student health insurance, or to request the insurance waiver, please contact the Student Health Center at (615) 343-4688.

• Activity Fees: All graduate students pay a Student Activity Fee, and this fee plus the student identification badge gives the student access to the excellent facilities at the Student Recreation Center the Libraries and other Vanderbilt resources. These fees are either paid by the stipend funding source or by the student. It is a complicated issue determined by the source from which the student's stipend comes. Students should speak with Mary Michael-Woolman for clarification about their particular circumstance. Spouses, domestic partners, and dependents may also use the facilities for an additional fee that is paid by the student.

• Transcript Fees
  o First time students at Vanderbilt: All new incoming students will be assessed a $30 one-time transcript fee. This fee will be paid by the Neuroscience Graduate Program. Once a new student pays the one-time fee, a fee for each transcript will no longer be charged. Other special handling fees (FedEx, UPS, etc.) may be charged and this will be the responsibility of the student.
  o Returning Vanderbilt Students: Returning students will continue to pay a “per transcript fee” until they have paid a total of $30. These fees will be paid by the Neuroscience Graduate Program. If transcripts are ordered online, the fee will be charged to the person’s student accounts bill. Please bring a copy of this bill to Mary Michael-Woolman for payment. Other special handling fees (FedEx, UPS, etc.) may be charged and this will be the responsibility of the student.

• Student Accounts Bills: Tuition, insurance and fees are pre-billed, so one should not panic a bill for several thousand dollars is received. If the next bill still shows a balance, please bring this bill to Mary Michael-Woolman so that any problems can be resolved and no late fees are charged. Note: the student is responsible for traffic Violations, pharmacy bills, housing, etc. that are charged to the student account and for any associated late fees. Any student with a balance on their student account going into the Fall or Spring semester will not be allowed to register.

Graduate students are eligible for a variety of Vanderbilt-derived grants. The Vanderbilt “Dissertation Enhancement Grant” (up to $2,000) is intended to enhance already outstanding dissertation projects by permitting the addition of a new dimension, additional breadth, or other worthwhile extensions. Funding will not be available from this source for aspects of dissertation work that is an integral or essential constituent of the research as described and understood in the dissertation proposal, but rather as a means of expanding the scope of what was already approved in the research proposal. Applications for the Dissertation Enhancement Grant are usually due in February, so please visit the website for the specific date. The “Graduate Student Travel Grant” is an essential means of support for travel to present a student’s research. The student is eligible for up to $500 for domestic travel each year, and up to $1,000 of international travel (outside North America) every two years. Application for this extremely versatile grant involves filling out this form and submitting the student’s presentation abstract. Applications are rolling.

The Society for Neuroscience offers two types of Graduate Student Travel Awards: (http://www.sfn.org/index.aspx?pagename=FellowshipAndAwards#travel):

1. The first (supported by Eli Lilly & Co.) is administered by the Professional Development Committee (PDC), and includes complimentary registration and a stipend to offset travel expenses for the SfN annual meeting.
   a. Awardees are chosen on the basis of the scientific merit of their abstracts, a letter of nomination from a principal investigator or advisor, research and career goals, and essay. The award is open to both women and men.
   b. Deadline for receipt of application materials is generally around the middle of June.
2. The second (also supported by Eli Lilly & Co.) honors outstanding graduate students nominated by their local SfN chapter. The award provides a stipend to help defray travel expenses and provide complimentary SfN meeting registration fees.
   a. Awardees are chosen based on the scientific merit of the abstract, evidence of outreach activities, and letters of nomination from the principal investigator or mentor and the local nominating chapter.

*Ruth L. Kirschstein National Research Service Award (NRSA) and other Grant Opportunities*

All Neuroscience Graduate Program students are encouraged to submit a nationally competitive predoctoral grant application. The Ruth L. Kirschstein National Research Service Award (NRSA) is a NIH grant mechanism that provides stipend and tuition support for the duration of the student’s graduate training. Other graduate student fellowships are offered by the National Science Foundation or by private foundations, and can be substituted. The awarding of these individual NRSA or other independent graduate student funding mechanisms reflect exceptionally well on the student, their laboratory and the program. In preparing the submission of an external grant, Mary Michael-Woolman can offer invaluable guidance on all budgetary aspects, and she may even submit the grant for the student directly.

*Policy Regarding Outside Employment*

Stipend and tuition fellowships are awarded to allow students to devote full time to the pursuit of a Ph.D. degree in the Neuroscience Graduate Program and to complete the requirements for the degree in as short a time as is consistent with adequate training and research progress. The student should not engage in additional employment while receiving a stipend through the graduate program, regardless of the source of that stipend, because such employment causes a serious impediment to the graduate educational process. Graduate education and research are of necessary, largely self-motivated processes, and the distractions of outside employment can interfere with the ability of students to prepare satisfactorily for their future professional careers. If additional income is absolutely necessary, students are encouraged to consider low-interest student loans. Advice about such loans may be obtained from the Vanderbilt University Financial Aid Office. If a student feels strongly that outside employment is necessary while in the Neuroscience Graduate Program, this must be discussed with the student’s dissertation advisor and a formal request must be submitted to the DGS. Students should be aware that such requests will rarely, if ever, be granted. However, if outside employment is necessary and is approved by the DGS, the student must not allow it to interfere with high standards of performance and the timely completion of graduate education and research training. If a student is discovered to have unapproved outside employment, he/she may face immediate dismissal from the Program.
Additional Expectations

In addition to earning 72 course work and research hours and maintaining at least a B average, there are additional Program requirements.

1. Every student is required to complete a Teaching Apprenticeship/Assistantship in at least one course during graduate training, recommended during year 4 or 5 but partly determined by Track and program needs.

2. Neuroscience Graduate Program students are required to attend the bi-weekly Neuroscience Graduate Program Seminar series, bi-weekly Research Forum meetings, and the Annual Neuroscience Retreat. Students who are in their third year at Vanderbilt or beyond are required to do either a poster or oral presentation at the retreat.

3. Finally, students beyond the second year are encouraged to participate in outreach opportunities afforded through the Vanderbilt Brain Institute. Details of these additional requirements are described in the section on Additional Information Regarding Training Requirements and Opportunities.

4. While not required, all students are encouraged to attend topic-specific journal club meetings, and Cognitive & Systems track students are encouraged to attend the Psychology Neuroscience Seminar.

5. Throughout graduate training, students are expected to engage in scholarly activities, such as studying the scientific literature with the goal of integrating this new information into their own research questions, and attending lectures, journal clubs, and scientific meetings in order to keep abreast of the most recent scientific achievements.

Meeting these and other expectations will foster a student’s professional development, establishing a scientific lifestyle of learning that will persist throughout his/her professional career.

Additional Information Regarding Training Requirements and Opportunities

Seminars: In addition to didactic course and laboratory research requirements, all students in the Neuroscience Graduate Program are required to attend the Neuroscience Graduate Seminars series. The series presents lectures by nationally renowned investigators conducting state-of-the-art research, allowing graduate students and faculty to keep abreast of ongoing achievements in neuroscience research. Students in the program may be asked to meet with visiting lecturers in the Neuroscience Graduate Seminar Series, expanding their professional contacts with leading researchers.

Students are also required to attend Neuroscience Research Forum, in which trainees have the opportunity to present their own research to their fellow trainees (students in their first year are expected to present a paper in a journal club format). Seminars presented by the Kennedy Center for Research on Human Development, the Vanderbilt Vision Research Center, the Departments of Biological Sciences and Psychology in the College of Arts and Science, and medical school departments further enhance the neuroscience graduate students’ access to scientists and research breakthroughs in related disciplines. In addition, departments at Vanderbilt offer journal clubs that focus on specific areas within neuroscience. Students are encouraged to attend these seminars, if interested.

Teaching: Another component of every neuroscience graduate student’s training is the TA-ship, which provides experience in preparing and giving lectures and exposes the student to the responsibilities and duties of a course director. Opportunities are made available for every student to assist in one or more of the required or elective courses. There are three kinds of “TAs” in the Neuroscience Graduate Program: (1) “Teaching Assistantships” for undergraduate neuroscience courses performed as a condition of stipend support from the College of Arts and Science, (2) “Teaching Assistantships” assigned for NURO graduate courses, and (3) “Teaching Apprenticeships” arranged by students with individual professors. Each student in the NURO program must complete one semester of one type of “TAship”. Assignment of TAs should be done spring/summer (May/June) for the following academic year.

- Type 1 – Assignments are usually handled by the Undergrad Neuroscience Director and the CICN Director in consultation with the VBI director and DGS. These TA-ships are usually fulfilled as a condition of support pre-qualification.
• Type 2 and 3 TAs usually occur post-qualifying (year 4), but can occur prior to or following that interval.

o Type 2 – NURO courses currently assigned TAs are 327, 330, 340 (2), and 345 (2). Note that the load is biased toward systems courses and students so the program must be proactive in assigning these students to courses rather than letting them do type 3 apprenticeships. The DGS/Graduate Coordinator assigns these TAs in consultation with the VBI director (draft letter attached). They do not involve any monetary support to the student.

o Type 3 – “Teaching Apprenticeships” are then performed by all students not having been assigned a type 1 or 2. The DGS/Graduate Coordinator notifies all of these students of the requirements and procedures (draft letter attached). Each student must arrange for a TA with a professor (usually, but not always the mentor), submit a brief written description of the TA activity to be performed, which is forwarded by the faculty member to the DGS signaling his/her of the TA activity approval. The DGS approves and forwards this to the Coordinator for the students file and database.

Teaching opportunities outside the traditional university classroom setting are also provided. These include, but are not limited to, public education and community outreach activities that form Vanderbilt’s Brain Awareness celebration each March.

**Outreach:** One goal of Vanderbilt’s Brain Awareness program is to educate the general public about how normal behaviors and functions are subserved by brain activity, and on the relationships among brain dysfunction, mental illness, and neurological disease, and the importance of biomedical research in understanding normal brain function and treating or eradicating nervous system diseases. As members of Vanderbilt’s neuroscience community, neuroscience graduate students help attain this public education goal, and opportunities have included: visiting a fourth grade classroom and describing the “whys and hows” of your research; developing and conducting “hands on” neuroscience activities and demonstrations for middle school students visiting on the Vanderbilt campus; helping coordinate the annual high school Brain Bee competition; and leading interactive learning experiences for families visiting the Brain Blast brain fair at Nashville’s Adventure Science Center.

**Neuroscience Retreat:** Each Fall the Vanderbilt Brain Institute coordinates a Neuroscience Retreat. Neuroscientists from the Vanderbilt University School of Medicine, the College of Arts and Science, the Kennedy Center for Research on Human Development, Meharry Medical College, and other neighboring institutions gather for a day filled with brain-related talks, poster sessions, and food. The purpose of the Retreat is to foster communication among laboratories within and beyond the Neuroscience Graduate Program. Speakers from Vanderbilt’s own neuroscience community (both faculty and students) relate ongoing research projects and future plans, and a keynote address on a topic of general interest is presented by a nationally renowned neuroscientist. A graduate student poster session allows trainees and faculty to enjoy learning about and discussing the many varieties of neuroscience research being conducted at Vanderbilt in a relaxed and informal setting. Not only do these interactions stimulate new insights and collaborations, presenting scientific data and ideas at the Retreat will increase graduate student confidence and poise in future presentations at national meetings.

**Other Opportunities:** The Neuroscience Student Organization (NSO) was established by graduate students and includes any interested graduate student doing neuroscience-related work in any department or program at Vanderbilt. The NSO is run by students and has its own infrastructure including a president and advisory council. The NSO also coordinates an annual campus-wide Spring Neuroscience Seminar and plays a key role in coordinating the annual Neuroscience Retreat. There are many opportunities for neuroscience graduate students to gather informally with guests, faculty, and other trainees. For example, students can meet scientists visiting Vanderbilt at small, informal luncheons that include only neuroscience students and the guest speaker as well as at more formal receptions. Neuroscience graduate students also meet informally with neuroscience faculty members at the Neuroscience Research Forums. Many other opportunities to establish a broad network of on-campus faculty relationships, to develop ties with non-Vanderbilt scientists, and to serve as hosts to more junior trainees are provided for neuroscience graduate students.
Program Traditions: The Neuroscience Graduate Program gives out five awards each calendar year.

1. The Elaine Sanders-Bush Student Research Award is given to the student that published the highest quality, highest impact paper in the academic year prior to the Retreat as chosen by a special committee comprised of faculty and designated by the Director of the Vanderbilt Brain Institute. Recipients receive a plaque and have their name inscribed on a permanent plaque which hangs in the Vanderbilt Brain Institute office. This award is presented at the Annual Neuroscience Retreat.

2. The Neuroscience Student Leadership Award is given to the advanced student who has demonstrated the highest level of leadership and service to the program and their fellow students. The recipient is nominated by their peers and is selected by a committee comprised of administrative staff, faculty, and students. All students who are finished with the qualifying process are eligible to be nominated. Recipients receive a plaque and have their name inscribed on a permanent plaque which hangs in the Vanderbilt Brain Institute office; this award is presented at the Annual Neuroscience Retreat.

3. The Vanderbilt Reviews Neuroscience Cover Award is given to the third-year student who provided the cover-art for that year’s volume of VRN. The cover is chosen by VRN editorial board for impact and aesthetic quality. The winner gets his/her image printed on the cover of the journal, and receives a framed and matted copy of that cover along with the cover’s figure legend. This is awarded at the Annual Neuroscience Retreat.

4. The Neuroscience Retreat Poster Award is given to the poster session participant who is deemed to have prepared the most outstanding poster at the Annual Neuroscience Retreat (the panel awards one each to the outstanding graduate student and post-doc posters). The recipients are chosen by a panel of judges and receive a prize determined at the Retreat.

5. In the autumn, the program bestows the Neuroscience Forum Speaker Award on the student who received the strongest average audience rating for their forum presentation during the previous academic year. This award includes a framed certificate and a $100 travel grant.

In addition to the awards described above, the program holds parties on an annual basis. The purpose of the parties is to provide an opportunity for faculty and students to gather in an informal setting to socialize, and thus build cohesion across the program. The Annual First-Year Student Party is held in the autumn (usually in October), in order to welcome the new students who entered the program in August. In the winter, the program hosts a holiday party, typically in Medical Research Building III. Finally, the NSO hosts parties on a quarterly basis, during the academic year, for IGP students rotating in Neuroscience labs, to which all program graduate students are invited. The purpose of these gatherings is to provide a social outlet, as well as an opportunity for rotating students to meet and ask questions of students in the program.
### Qualifying for Ph.D. Candidacy

The Ph.D. qualifying process consists of several phases that should typically be completed by the end of the third year of graduate training. Successful qualification represents the final checkpoint for admission into candidacy for a Ph.D. degree. The purpose of the qualifying examination is to test the student’s general knowledge of neuroscience and familiarity with published research related to their dissertation project, and to determine whether the student possesses and can communicate analytical abilities needed for a scholarly career.

**Phase Ia**

The first phase of the Qualifying Process consists of a concise paper, reviewing the background literature that is relevant to the student’s projected dissertation research. This review must be submitted to the Director of Graduate Studies at least one month prior to Phase II (the oral exam), unless directed otherwise. Upon acceptance by the Phase II oral qualifying committee, this review is to be submitted to Editor-in-Chief (vrn@vanderbilt.edu) for publication with the reviews from the rest of the qualifying class in *Vanderbilt Reviews Neuroscience*, the official journal of the Vanderbilt Brain Institute. The format of the review must meet specific guidelines for publication (see next section).

Appended to the 5-page review must be a 6th page that describes the aims of the student’s planned dissertation project (this section should be limited to one-page and will not be counted within the five-page limit for the major review section). Prior to initiating the writing process, the student should consult freely with their advisor, laboratory members and other faculty, discussing relevant literature and techniques, and refining the focus for the review, as well as formulating the specific aims of their planned dissertation research. Students may consult with the mentor or other faculty during the writing; however, consultants should not dictate the content or provide templates (e.g., a grant). As of 2010, faculty may critique drafts of the written document. This review frames an oral examination by a four-person examining panel, composed of faculty best suited to test the breadth and depth of the student’s knowledge. The dissertation advisor cannot serve on the Phase Ib examination panel.

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1 Mentors are highly encouraged to critique the written document before and after completion of Phase Ib and before submission to *Vanderbilt Reviews Neuroscience.*
The document should be original, targeting an area that may be suitable for dissertation investigation. Although published reviews may be consulted, an existing review should not be used as a template.

Specific formatting guidelines are to be strictly adhered to, lest the review be rejected out-of-hand. Please see:

http://vrn.vanderbilt.edu/authors.html

The review (and Specific Aims page) should be submitted as a *.doc along with PDFs of the key papers cited in the review at least 4 weeks before the Phase Ib oral qualifying exam. Authors should send these files to their program representative for dissemination to the four-person oral qualifying committee.

The written document will be accepted or rejected on its own merits prior to the oral examination; however, the oral examination will proceed even if the written document is rejected. Within one week after the document submission, the DGS will examine the written review to determine if it has a suitable basis in neuroscience and is otherwise structured according to the directions. If the DGS determines the document to be suitable enough to provide a basis for the examination, the document will be sent to the examining panel. At the Phase II oral exam, if the student’s written document is judged unsatisfactory, but the student passes the oral portion of the examination, s/he must rewrite the review and submit an acceptable revised version within one month after completion of the oral examination, to be assessed by the chair of the committee based on stated concerns from the initial review.

After passing Phase Ib of the qualifying process and making any recommended changes to the document, it should be submitted in the proper format with auxiliary material to the Editor-in-Chief of Vanderbilt Reviews Neuroscience (vrn@vanderbilt.edu).

Phase Ib

The Phase Ib oral qualifying committee consists of four Neuroscience faculty members selected by the Director of Graduate Studies to best test the breadth and depth of the student’s knowledge. The DGS or the Program Director serve as ex officio members of the committee. The examination begins with the student giving no more than a 5-minute overview, followed by questions from the faculty designed to evaluate the student’s general knowledge, ability to integrate didactic information into research design, capacity to connect and synthesize interrelated ideas and ability to think clearly and critically. The exam is limited to 1.5 hours. Students are advised that members of the committee are asked to familiarize themselves with key papers cited in the review article and to ask questions about specific experimental approaches and data from cited papers during the oral examination. If a student fails the oral examination, s/he may elect to withdraw from the program or repeat the oral examination within 6 months. If the student chooses to make a second attempt at passing the qualifying exam, the student is instructed to meet with the committee members, the DGS and his/her mentor and develop a written study plan that s/he and the mentor must submit to the DGS. A second unsuccessful oral examination will be grounds for termination from the program.

An initial organizational meeting to prepare students for the Phase I Qualifying Examinations will be held during the spring of the students’ qualifying year. At this meeting, proper format for the literature review and examples of questions likely to be asked during the oral exam will be reviewed; the Director of Graduate Studies and other members of the Neuroscience Graduate Program will be present to answer questions.

Phases II

This phase of the qualifying examination require the submission of a dissertation proposal in NRSA format (Phase Iia) that will be evaluated by a Dissertation Committee (Phase Iib), comprised of the advisor, two members of the Neuroscience Graduate Program faculty, and one member of the Vanderbilt faculty who is not affiliated with the Neuroscience Graduate Program. The Dissertation Committee serves as a working team to help the student in a number of ways including offering suggestions about experimental technique and design, and providing continual encouragement to be innovative and take risks—characteristics
that are crucial to long-term success in research. Therefore, it is important that the Dissertation Committee be carefully selected, with consideration of the scientific training, intellectual interests, and research activities of each Committee member. The diversity of intellectual activity that will be present in a student’s research project should be reflected in the composition of the Dissertation Committee.

Unlike the Phase Ib oral qualifier, the student and dissertation advisor propose the composition of the Dissertation Committee to the Director of Graduate Studies (through the Program Coordinator), who then evaluates it and, if approved, sends it to the Dean of the Graduate School for final approval. The Dissertation Committee is crucial to the trainee’s research progress and professional advancement, and thus its composition should be based on sound scholarship and service to the student.

The meeting with the Dissertation Committee (Phase IIb) must take place within 6 months of passing Phase I; it is the responsibility of the student to schedule the meeting and inform the Director of Graduate Studies at least one-month prior to the scheduled meeting. The dissertation proposal is prepared by the student, consulting freely with advisor or any other source. The dissertation proposal must be submitted to the Dissertation Committee two weeks prior to the committee meeting. Students should prepare a handout of their multimedia slides to distribute to the committee. Following a 20-30 minute overview of the proposal by the student, the committee will ask questions on any aspect of the proposal including but not limited to rationale, methods, experimental design and feasibility. If the student is judged to be inadequately prepared or it is determined that the dissertation project is not feasible, the Phase IIb examination must be repeated and the written proposal (Phase Ila) may have to be revised before defending it at another committee meeting. Note: Once the student schedules Phase IIb, they must obtain approval from the advisor and the Director of Graduate Studies to cancel or re-schedule the meeting.

Ruth L. Kirschstein National Research Service Award (NRSA) Formatting
(excerpted from U.S. Department of Health & Human Services: Public Health Services SF424 (R&R))
Complete Individual Fellowship Application Guide SF424 (R&R) can be found here.

Becoming a Doctoral Candidate
The entire qualifying process must be completed by the end of the third year of graduate school or the student faces dismissal from the program. Any exceptions to these guidelines must be discussed in advance with the Director of Graduate Studies. After the successful completion of the Qualifying Examination, the Director of Graduate Studies will notify the Graduate School so that they can officially designate the student as an official doctoral candidate.

Submission of the Grant Proposal to NIH or Equivalent
After incorporating recommendations made by the student’s Qualifying Examination Panel and Dissertation Committee, the student is HIGHLY encouraged to submit a nationally competitive grant to the National Institutes of Health or some other funding agency. Once the dissertation committee has approved the proposal, the student should work with their advisor to refine the proposal for submission to external agencies. Mary Michael-Woolman can answer most questions regarding practical and financial matters and can assist in the submission of fellowship applications.

Subsequent Dissertation Committee Meetings and Expectations

During the time between becoming an official Ph.D. candidate and the dissertation defense, each student must convene the Dissertation Committee periodically so that committee members can monitor the student’s progress and make timely, constructive suggestions. Students are required to meet with their committee at least every nine months. However, the student and advisor may decide more frequent committee meetings are necessary, such as at the completion of a major set of experiments or at other critical points in the research process. Students should prepare and distribute a brief two to three page progress report to their committee at least one week prior to their committee meeting. The report should highlight accomplishments and problems which have occurred since the previous committee meeting. Also, the program expects students to prepare handouts of their multimedia presentation slides for the committee members and make them available at the meeting. The presentation should summarize the main points in the progress report, including data collected.
Dissertation Research

The most important aspect of the Neuroscience Graduate Program is the student’s dissertation research. Other aspects of the program are designed to provide the scholarly background and professional experiences that prepare the student to conduct and defend the dissertation research and, subsequently, to develop a career as an independent investigator. Thus, after the student completes both phases of the Qualifying Examination, efforts should focus towards completing his/her project.

Before Dissertation Submission to the Committee

It is appropriate to convene a committee meeting once all data are collected and analyzed, several months before the final defense date. This meeting can resolve, before the final defense, any major stumbling blocks that might preclude committee approval of the final dissertation project. Before dissertation writing begins, students should obtain a copy of the Graduate School’s official instructions, available online at http://www.vanderbilt.edu/gradschool/current_students/index.php#theses. Be advised: these instructions must be followed exactly, or your committee-approved dissertation will not be accepted by the Graduate School. It is recommended that the student bring samples of cover pages, figures, and text pages to the Graduate School for review. If specific changes must be made, find out exactly what needs to be corrected and how. Call ahead at (615) 343-2727 to make an appointment with the Assistant to the Registrar. A Manual for Writers of Term Papers, Theses, and Dissertations by Kate L. Turabian (Univ. Of Chicago Press, 7th edition, 2007) offers excellent information and advice on developing a superior dissertation. Additionally, The Elements of Style by Strunk and White is an essential reference for any professional writer. The Neuroscience Graduate Program provides these books to trainees prior to the written qualification examination.


During the development of the dissertation, the student and advisor should review and edit the student-generated text together on a chapter-by-chapter basis. When both student and advisor agree that the dissertation is completed, the student sets up the thesis defense with committee members and, no later than three weeks before the defense date, notifies the Interdisciplinary Program Coordinator as to the date, time, and place of the defense as well as the title of the dissertation. The Interdisciplinary Program Coordinator subsequently notifies the Graduate School.

Candidates for the Ph.D. degree in Neuroscience must present an acceptable dissertation in a contemporary area of neuroscience that adds to or modifies what was previously known. Professional achievement must also be evident and should include presentation of research findings at national meetings. The program requires that the student have a first-authored publication (or manuscript in press) in a peer-reviewed scientific journal prior to defending their dissertation. Before the DGS can approve a request from the student to set a defense date, the Program requires the student to produce either the published first-authored manuscript or at least a submitted manuscript’s “letter of acceptance.”

Submission and Defense of the Ph.D. Dissertation

Dissertation Submission

(Excerpted from http://www.vanderbilt.edu/gradschool/current_students/index.php#theses)

The dissertation defense should be scheduled at a time when all Dissertation Committee members can attend. In order to achieve this, the defense must often be scheduled well in advance of the anticipated date. Although most dissertation defenses take less than two hours, a two-hour period should be scheduled. All Dissertation Committee members must receive a copy of the dissertation at least two weeks prior to the defense date.

Electronic Submission: The Vanderbilt Neuroscience Graduate Program recommends the use of electronic rather than hardcopy dissertation submission. The graduating student must complete the following five steps when submitting his/her dissertation electronically.

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2 For hardcopy submission, gain approval from the Interdisciplinary Program Coordinator and go to http://www.vanderbilt.edu/gradschool/current_students/index.php#theses
1. Complete an Intent to Graduate Form the semester s/he plans to graduate. See Handbook Calendar for pertinent deadline dates.

2. Obtain final approval of the document content from the dissertation advisor and committee members.

3. Obtain final format approval from the Graduate School by contacting Liz Leis at (615) 322-3934. Special formatting requirements for electronic submission, as listed below, should also be followed.

   a. Original faculty signatures do not appear on the electronic title page. Following the city and state, centered and at least double-spaced below, type the word "Approved," followed by a colon. Under this word, centered, one under another and double spaced list the full names of the faculty members who signed the original title page.
   b. Optionally, students who submit electronically may use a one inch left-hand margin and may use line and one-half spacing.
   c. Students may use any standard word processing, spreadsheet, and database software for the preparation of their document.
   d. Students may employ the use of links within their document but may not link to sites outside their document unless it is possible to copy and submit the entire file with their document so that the link will remain unbroken throughout perpetuity.
   e. After Graduate School format approval students convert the document to PDF format and upload the dissertation on the ETD website.
   f. The Graduate School must be provided with two hard copies of the title page and two hard copies of the abstract, all containing original signatures. Title pages and abstracts must be printed on acid free, white, quality bond paper of at least 25% cotton content and 20 pound weight. Vanderbilt watermarked paper, available at the Rand Bookstore, is recommended.

4. Pay all required fees and submit all required forms to the Graduate School.

5. Work with the library technology support team to submit document files and convert all appropriate files to PDF format.

Once the student is ready to submit his/her dissertation electronically, s/he must create an account with the Electronic Theses and Dissertation library. Authors determine the access to their work when creating their ETD account. The availability can be changed at a later time by the author or by a graduate school staff member, with permission from the author.

**Overview of the Defense**

As a final requirement for completion of the Ph.D. degree in Neuroscience, each candidate must orally defend the dissertation before the Dissertation Committee and other interested persons. This initial, “public seminar” portion of the defense consists of a 45-50 minute oral presentation summarizing the project for the committee and public attendees. Following this oral presentation, the public may question the candidate and then, in a closed session, the Dissertation Committee will ask questions related to the dissertation research in order to assess the thoroughness of the candidate’s knowledge and the quality of the work. The successful oral defense of the dissertation requires that the candidate demonstrate authority and expertise in his/her research area.

After the oral defense, the Dissertation Committee determines whether the candidate passed or failed the dissertation defense, and notifies the candidate at that time. The Dissertation Committee will file the official decision with the Graduate School. Since the Graduate School requires that all Dissertation Committee members affix their signatures to each of at least three title pages of the dissertation on bonded paper (see Graduate School dissertation guidelines below), students who pass their dissertation defense should be prepared to get signatures from their committee members before the defense meeting is adjourned, while all members are present. The candidate should then file all necessary forms with the Graduate School.
Completing the Ph.D. Degree Process

The Graduate School has several deadlines (see Calendar) that must be met during the semester in which the degree is to be awarded, including: (1) last day to file “Intent Graduate” form; (2) last day for approval of dissertations and successful oral defense of thesis research; (3) last day candidate’s approved copies of the dissertation are accepted in the Graduate School Office. These deadlines are listed in the Graduate School dissertation guidelines packet and in the handbook Calendar. The Ph.D. candidate must have completed all course work, submitted and successfully defended the dissertation, and be registered during the semester in which the degree is to be conferred. In addition to the two copies of your dissertation that must go to the Graduate School for binding, you are responsible for having copies bound for distribution to your Dissertation Committee members (hardback binding for Advisor; paperback binding for other Committee members) as well as a hardback copy for the Neuroscience Interdisciplinary Program Coordinator. You will also want to have copies bound for your own use. The Neuroscience Graduate Program will pay for the binding of three hardback copies (one for the Neuroscience Interdisciplinary Program Coordinator, one for your Thesis Advisor, and one for you) and the paperback copies for your Committee members. Students who complete their defense and turn in their paperwork to the graduate school between the deadline for the previous semester and the first day of the next semester do not have to register for the following semester, but regardless, their graduation date will be the end of the semester following the defense.
Life After Degree Completion

Deciding what direction your career will take following completion of the Neuroscience Graduate Program should arise early and become increasingly important as your training progresses. It is never too early to consider career options and plan a curriculum accordingly. To prepare further for a career of independent research in academic biomedical research, it is usually essential that students who receive the Ph.D. in Neuroscience take a postdoctoral position in order to pursue a specific research interest and acquire additional technical skills and expertise. Some students may take permanent positions in industrial or government research laboratories or at teaching-oriented colleges immediately after receiving their degree. Your career objectives can best be realized through the careful planning of your graduate training program. Your advisor, Dissertation Committee, Director of Graduate Studies, and members of the Neuroscience Ph.D. faculty and Program staff stand ready to advise you on career options. In addition, Vanderbilt’s Career Center offers a variety of services including resume and interview assistance, and on-campus employer interviews (call 615-322-2750). For individual career counseling, contact the Psychological and Counseling Center, at (615) 322-2571.
The Essential Question: “How do I…”

This is a mini-guide to assist the student in obtaining some basic services and getting some fundamental things done. In some cases, how one goes about things depends on which Track (Cognitive & Systems or Cellular & Molecular) one is in. When this is the case, it is duly noted below.

How do I…

...OBTAIN A STUDENT I.D. BADGE?

Student I.D. badges are free but the cost to replace a lost one is $15.00 out of one’s own pocket, so do not lose it. They not only identify the student, but they allow access to libraries, the Student Recreation Center, and other facilities and events. The student can pay to have money put on them and use them as debit cards to purchase things from bookstores and cafeterias. Moreover, many buildings on campus are only “open” (unrestricted) during limited, prescribed hours, so the I.D. badge serves as a building access card, to allow continuous access to research space.

- **Systems & Cognitive Trainees**: Go to 184 Sarratt Student Center Monday-Friday, between 8:30 a.m. - 4:00 p.m., telephone number (615) 322-2273 (322-CARD). Once the student has been accepted to Vanderbilt by the Graduate School, s/he should be in the computer system. The badge makers will look the student up to verify that s/he is a graduate student, will snap the student’s photo, and make the identification badge on the spot.

- **Cellular & Molecular Trainees**: Identification badges are issued during the first year as an IGP or MSTP student and this badge may be used for the duration of the student’s tenure in the Neuroscience Graduate Program. If the student needs to replace a lost card, see “Special Status” student information below.

- **“Special Status” Students**: For transfers, visiting students, or for those that are taking a specialized curriculum that will ultimately result in a Ph.D. from the Neuroscience Graduate Program, please see Administrative Officer Mary Michael-Woolman for a form that will allow one to obtain a badge. Details regarding the location and open-times of this card office can be obtained from Mrs. Michael-Woolman when she provides the form to be taken to this office.

The student’s photo will be taken and I.D. badge made on the spot.

OBTAIN A CAMPUS PARKING STICKER?

Students driving a car to campus may want to get a parking sticker since metered and free parking spaces near campus are limited. Depending on how the student is getting paid, s/he may be able to have the expense of parking deducted from his/her payroll.

- **Systems & Cognitive Trainees (Arts & Sciences)**: Bring student I.D. and vehicle registration to the Office of Traffic and Parking in the Wesley Place Garage off 21st Ave. South (same building as CVS). They are open Monday-Friday, 7:30 a.m. - 4:00 p.m., telephone number is (615) 322-2554. As of August 2010, annual cost is at least $258.00 depending on the spot and location.

- **Cellular & Molecular Trainees (VU Medical Center)**: Will have done this in their IGP year. The VUMC Parking Office is at 22nd Avenue East Garage, Level G. Telephone number is (615) 936-1215 option 3. As of August 2012, cost is $10.51/month ($126.12/year), and permits are available for each semester or for a whole year, but these must be prepaid—they will not be payroll deducted. Spots are currently being assigned in Village Parking or the central garage, though this changes frequently.
...GET PAID?

Direct deposit is strongly encouraged, and can be set up with the VBI Administrative Officer Mary Michael-Woolman, 1205 MRB III. Funds available the last working day of each month. If the student desires to have a check cut, it will be available in the office of Mary Michael-Woolman on the last working day of each month.

For checks, there will be a sheet with the student’s name on it that must be signed and dated on the appropriate line when the check is picked up. Mary Michael-Woolman does almost all of the administrative work that allows students to receive their stipend each month, and pays their health insurance, tuition and other fees. She and, less frequently, Roz Johnson will occasionally have paperwork that they will ask the student to complete and/or sign to keep that student a “current” graduate student and in the payroll system. It is important to comply with such requests at one’s earliest convenience; otherwise the next paycheck may be delayed.

...OBTAIN HEALTH CARE?

All graduate students, unless they sign an insurance waiver, are covered by health insurance through Vanderbilt University. Coverage runs from August 12th of one year through August 12th of the next. This gives the students uninterrupted access to healthcare.

- **The Student Health Center**, Zerfoss Bldg. The student should call (615) 322-2427 for an appointment if s/he is ill and requires basic health care, immunizations or allergy shots, pregnancy testing, S.T.D. testing (including HIV), contraceptives, a referral to see a specialist, or to utilize confidential mental health services.
- **Student Health Insurance** is provided by Koster Insurance. The cost (presently $2,142.00 per year) is paid for by stipend/payroll funding source. Spouses and other dependents can be covered by this insurance but guidelines for paying for such coverage vary and payment of the premium for this additional coverage is the responsibility of the student. For additional information about student insurance, one should first contact Roz Johnson, and then contact the Student Health Center. One can also call either the Vanderbilt Insurance Representative, Cyndy Spurlock at (615) 343-4688, or visit the web at: [http://www.vanderbilt.edu/student_health/student-health-insurance/important-links](http://www.vanderbilt.edu/student_health/student-health-insurance/important-links)

...SET UP AN EMAIL ACCOUNT?

A significant proportion of communications occurs via email, so email messages should be checked habitually.

- **Systems & Cognitive Trainees**: Go to [http://its.vanderbilt.edu/vumail/](http://its.vanderbilt.edu/vumail/) and follow the instructions.
- **Cellular & Molecular Trainees**: This will have been done in the IGP year, but can be accomplished by going to [http://its.vanderbilt.edu/vumail/](http://its.vanderbilt.edu/vumail/) and following the instructions.

...GAIN ACCESS TO THE STUDENT RECREATION CENTER?

All Graduate students pay a Student Activity Fee whether they wish to or not, and this fee plus a student identification badge grants access to the excellent facilities at the Student Recreation Center, the Libraries and other Vanderbilt resources. The way in which these fees are paid is either by the stipend funding source or the student. It is a complicated issue determined by the source from which the student’s stipend comes. Students should speak with Mary Michael-Woolman for clarification about their particular circumstance. Spouses, domestic partners, and dependents may also use the facilities for an additional fee that is paid by the student.
Important Contacts

Neuroscience Graduate Program
Mark T. Wallace, Ph.D.
Director, Vanderbilt Brain Institute
Director, Neuroscience Graduate Program
Professor of Hearing & Speech Sciences, Psychology and Psychiatry
7110 MRB III
(615) 936-6709
mark.wallace@vanderbilt.edu
Dr. Wallace oversees all elements of the VBI, including the neuroscience graduate program, neuroscience training faculty, neuroscience research activities, community outreach and development activities.

Douglas McMahon, Ph.D.
Director of Graduate Studies
Professor, Biological Sciences and Pharmacology
8270A MRB III
(615) 936-3933, Fax: (615) 936-3932
douglas.g.mcmahon@vanderbilt.edu
Dr. McMahon advises students regarding courses and scientific development, as well as tracking student progress. He is also available for advice on issues related to advancement to the degree, including helping students work more effectively with their advisors.

Ronald Emeson, Ph.D.
Associate Director for Research
Professor of Pharmacology, Molecular Physiology & Biophysics and Psychiatry
8140 MRB III
(615) 936-1688
ron.emeson@vanderbilt.edu
Dr. Emeson is responsible for oversight of VBI resources including VBI-managed space, common equipment and the Neurochemistry and Rodent Neurobehavioral Cores, as well as management of the Neuroscience Seminar Series.

Mary Michael-Woolman
Associate Director of Finance and Administration
6133 MRB III
(615) 936-0273, Fax: (615) 936-2062
mary.michael@vanderbilt.edu
Mary oversees all financial and operational aspects of the VBI. These include budget, human resources and space and facility-related issues. Mary also oversees all financial matters for students in the neuroscience graduate program, including payroll, insurance, grant related activities including submission and post award management, and travel-related expenses.
Roz Johnson, B.B.A.
Interdisciplinary Program Coordinator
U-1205 MCN
(615) 936-2610, Fax: (615) 343-3613
roz.johnson@vanderbilt.edu
Roz is responsible for the day-to-day management and operations of the neuroscience graduate program. She represents the first point of contact for students with questions regarding course and curriculum issues, and also plays a major role in the planning and execution of all program-related activities.

Shirin Pulous
Administrative Assistant I, VBI
U-1205 MCN
(615) 936-3736, Fax: (615) 343-3613
shirin.pulous@vanderbilt.edu
Ms. Pulous is a great resource when Roz Johnson is unavailable to field questions or resolves problems and can answer questions about your student record.

The Graduate School

Richard Hoover
Associate Dean of Graduate Studies
411 Kirkland Hall
(615) 322-2639
Dean Hoover handles admissions, student affairs, and fellowships and financial awards for graduate students.

Barry Kendall
Registrar
411 Kirkland Hall
(615) 322-3941
Mr. Kendall oversees student courses and other records for the Graduate School.

Liz Leis
Assistant to Registrar
411 Kirkland Hall
(615) 343-2727
liz.leis@vanderbilt.edu
Ms. Leis is your first stop for inquiries to the Graduate School. Perhaps most important, she approves dissertations for the Graduate School and answers many other questions associated with qualifying examinations and dissertation defenses.
Financial Aid

David O. Mohning
Director
2309 West End Ave. (37203)
(615) 322-3591

Student Accounts

Pam Canady
100 University Plaza
112-21st Ave. S.
(615) 322-4092, Fax: (615) 343-8511
stuaccts@uansv3.vanderbilt.edu

Tracy Donnell
Graduate Tuition Grants/Department Awards
(615) 322-6694

Student Health

Zerfoss Student Health Center
http://www.vanderbilt.edu/student_health/
(615) 322-2427

Student Health Insurance
http://www.vanderbilt.edu/student_health/student-health-insurance

Brochure of Plan Terms:

Cyndy Spurlock
Vanderbilt Insurance Representative
(615) 343-4688 or (615) 322-4092

Bookstores
Vanderbilt Bookstore 343-2665

Career Center 322-2750

Center for Teaching 322-7290

Opportunity Development Center 322-4705
(Disability Services)

International Student & Scholar Services 322-2753

I.D. Cards
C&S Trainees 322-2273
C&M Trainees 936-3350

Libraries
Biomedical 936-1401
Main (Heard) Library 322-2800
Science 322-2775

Parking
C&S Trainees 322-2554
C&M Trainees 936-0686

Police – Nashville Metro
General Information 862-4700
Non-emergency 862-8600
EMERGENCY 421-1911
322-2222

Psychological & Counseling Center 322-2571

Recreation Center 343-6627

Sarratt Student Center 322-2471
Laboratory Rotation Form
(First year direct admits)

Student Name:________________________________________________

Mentor:_______________________________________________________

Semester (circle one) Fall Spring

Brief summary of project:

Signatures:

Student :__________________________________________ Date________

Mentor ____________________________________________ Date________

Director of Graduate Studies: ________________________ Date________

Form must be returned to Director of Graduate Studies prior to beginning of laboratory rotations.
RESPONSIBILITY AGREEMENT

NEUROSCIENCE GRADUATE PROGRAM

I accept the responsibility of the position of Graduate Student in the Neuroscience Graduate Program and agree to comply with the approved “Guidelines for the Graduate Program in Neuroscience”.

Student:_______________________________________________________________

SIGNATURE __________________________

DATE __________________________

NAME (Printed)

I accept the responsibility of Dissertation Advisor for the above-named student and agree to accept the fiscal and educational responsibilities associated with this position as detailed in the “Enrollment of students in the Neuroscience Graduate Program” guidelines and comply with the approved “Guidelines for the Graduate Program in Neuroscience”.

Mentor:________________________________________________________________

SIGNATURE __________________________

DATE __________________________

NAME (Printed)

I approve of the enrollment of the above-named student in the Graduate Program in Neuroscience and agree to the responsibilities outlined in the “Enrollment of students in the Neuroscience Graduate Program” guidelines.

Mentor’s Dept. Chair:_____________________________________________________

SIGNATURE __________________________

DATE __________________________

NAME (Printed)

The above-named student is approved by the Executive Committee for enrollment in the Graduate Program in Neuroscience.

Program Director: Mark T. Wallace, Ph.D Neuroscience

__________________________________________

SIGNATURE __________________________

DATE __________________________

Director of Graduate Studies: Douglas G. McMahon, Ph.D Neuroscience

__________________________________________

SIGNATURE __________________________

DATE __________________________
Ph.D Committee Request Form

Phase II of your qualifying process, your dissertation proposal, must be completed within 6 months of your Phase I passing date. You should immediately begin to consult with your advisor in choosing the members of your committee and preparing your written dissertation proposal for Phase II. Your committee should consist of your advisor, two members of the Neurosciences Graduate faculty, and one external member (outside of the Neuroscience training faculty). In order to make sure you choose someone outside of the training faculty, please check the website which lists our training faculty:

http://braininstitute.vanderbilt.edu/people/faculty.php.

It is very important that you notify Roz Johnson as soon as you have obtained agreement from all your committee members so that your committee can be formally appointed by the Graduate School. The program will then schedule your Phase II meeting for you and we need two month notice to do so, so please send us the information about your committee, including who will be your chair, no later than three months prior to the meeting deadline.

Please submit the names and departments of your faculty selection below:

**Neuroscience Program members**

Chair of committee: Signature:
Faculty member: Signature:
Advisor: Signature:

**Outside Member**

Faculty member: Signature:
Department:
Graduate School Travel Grant Form:
http://www.vanderbilt.edu/gradschool/current_students/pdf/Request_for_Travel.pdf

Intent to Graduate Form:
http://www.vanderbilt.edu/gradschool/current_students/pdf/December12Intent.pdf
http://www.vanderbilt.edu/gradschool/current_students/pdf/intent_to_graduate_form_may_2013.pdf