

Department of Anatomy & Neurobiology
Boston University School of Medicine
Doctor of Philosophy in Anatomy & Neurobiology

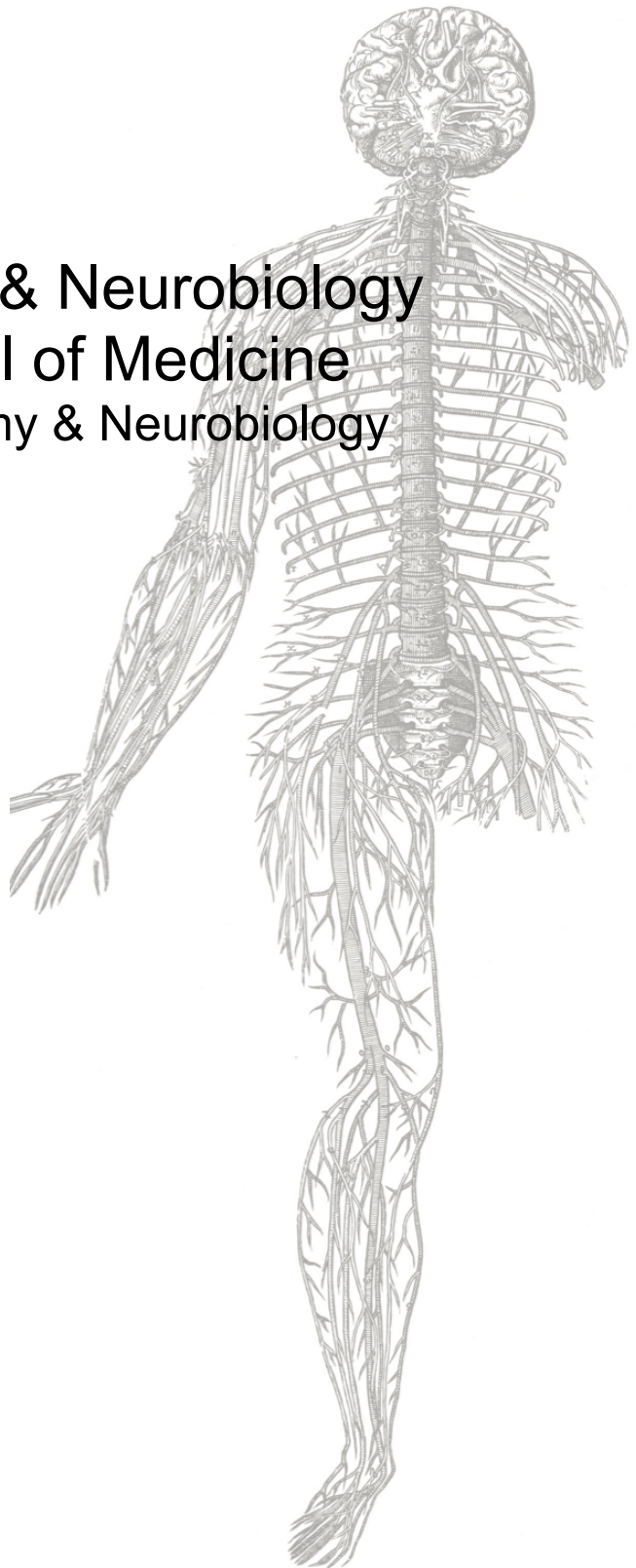




Table of Contents	Page
Contact Information	3
Ph.D. Student Guidelines	4-26
Post Qualifying Exam Policy and Procedures	27
Graduation Checklist	28
Teaching Fellow Expectations	29-33
Student Committee Position Descriptions	34
Important Dates	35
Good Things to Know	36-40

For all other information, including course descriptions, faculty research interests and contact information, please see the Departmental Website (www.bumc.bu.edu/anatneuro) or the Vesalius website (<http://www.bu.edu/vesalius/>).



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Ph.D. Student Guidelines

All students should familiarize themselves with the general policies of the Division of Graduate Medical Sciences as well as the program-specific requirements for the Doctor of Philosophy in Anatomy & Neurology Program found within this document.

Supplement to Boston University Division of Graduate Medical Sciences Guidebook.
(<http://www.bumc.bu.edu/gms/gateway/students/ma-and-ms-programs/policies-procedures/>)

CONTENTS	PAGE
I. Guide for Doctoral Candidates	6
A. Overview of the Ph.D. Program.....	6
B. Requirements for the Ph.D. Degree	6-7
1. Coursework for the Ph.D.	6
2. Qualifying Examination	6
3. Research	7
4. Teaching	7
C. Coursework Requirements.....	7
1. Required and Elective Courses	9
2. Vesalius Certificate (optional)	8-9
3. Grades	10
4. Course Load	10
D. Qualifying Examination for Doctoral Candidates.....	11
1. Overview of the Qualifying Examination	11
2. Qualifying Examination Committee.....	12-13
3. Written Examination.....	13-14
4. Oral Examination	14-15
E. Research Requirements for Doctoral Candidates	16
1. Overview of Research Requirements	16
2. Primary Research Adviser	16-17
3. Research Committee	17



Department of Anatomy & Neurobiology
Boston University School of Medicine
Ph.D. Program Guidelines

4. Dissertation Prospectus/Outline	17-18
5. Writing of the Dissertation.....	18
6. Dissertation Examination Committee.....	18
7. Dissertation Defense (Final Oral Examination).....	19
F. Teaching Requirements for Doctoral Candidates.....	20
G. Assessment of Doctoral Candidate Progress	20-21
H. Department and Graduate Student Seminars and Journal Club.....	21
I. Graduate Education Committee.....	21-22
J. Graduate Student Organization	22
K. Ombudsman	22
L. Miscellaneous	22
1. Tutoring, Extramural Teaching or Other Employment	22
2. Vacation and Leave of Absence	22-23
II. Guide for M.D./Ph.D. Candidates	24
A. Overview of the M.D./Ph.D. Program	24
B. Requirements for the M.D./Ph.D. Degree.....	25
III. Appendix: Advanced Departmental Courses and Electives	26



I. GUIDE FOR DOCTORAL CANDIDATES

A. Overview of the Ph.D. Program

The program for the Ph.D. degree normally consists of two years of fundamental course work and three to four years of research, the results of which are incorporated into a dissertation. Students must also pass the qualifying examination, an examination with both written and oral components typically taken at the end of the second year. After the successful completion of the qualifying exam, the student spends the balance of time in the program performing research in support of his or her dissertation and fulfilling teaching requirements. The expected time line for completion of the Ph.D. degree is 5-6 years for the post-Bachelor's program and 2-3 years for the post-Master's program. The Ph.D. program has the following time limits after initial registration for doctoral study: Post-Bachelor's program - 7 years; Post-Master's program - 5 years.

The Bulletin of the Division of Graduate Medical Sciences, under Academic Policies and Procedures, describes the procedures involved when a student must extend his/her period of study beyond these limits.

<http://www.bumc.bu.edu/gms/gateway/students/ma-and-ms-programs/policies-procedures/>

B. Requirements for the Ph.D. Degree

1. Ph.D. in Anatomy and Neurobiology

The program of study for the Ph.D. degree requires a minimum of 64 graduate credits of course work and research, of which half may be satisfied by the M.S. degree or equivalent. Specific Core Course Requirements are outlined in subsequent pages. If it is deemed that an equivalent and appropriate course has been successfully completed in the three years preceding matriculation into the program, the student may petition the Graduate Education Committee to be exempt from the course. If the petition is approved, then the course may be substituted for another course. Requests to substitute a course must be submitted in writing to the Graduate Education Committee before the time of registration.

2. Qualifying Examination

The Qualifying Examination consists of both written and oral parts and is designed to test the student's scientific writing and communication skills based on an original research proposal that may or may not be the focus of the students' dissertation. It will also provide the student exposure to the grant writing process. Students typically take this examination during the spring semester in the second year of graduate study.



3. Research

Scientific research in the Department of Anatomy and Neurobiology focuses on advancing knowledge in the fields of anatomy and/or neurobiology. Anatomical and/or neurobiological research must be the principal focus of the dissertation; however, a student may include education research as a complementary component of the dissertation.

Students typically become affiliated with a faculty member and his/her research laboratory by the end of their first year in the Graduate Program. This faculty member will serve as the primary research advisor and will supervise the student's research. Additionally, the student will assemble at least two other faculty members to serve as members of the Research Advisory Committee. This committee is constituted no later than the semester after the qualifying exam. As the student approaches the completion of the research project, he/she must assemble a Dissertation Examining Committee. After submission of the written dissertation to the Dissertation Examining Committee, the student will present his/her research at a Departmental seminar and immediately proceed to the oral defense of the dissertation by the Dissertation Examining Committee.

It is an annual requirement for Ph.D. candidates to present their research progress at the Henry I. Russek Student Achievement Day (e.g. abstract poster). First year Ph.D. candidates are exempt from this expectation, but may choose to present if sufficient research progress has been made.

4. Teaching

All students are required to participate as a Teaching Fellow in Departmental courses. Doctoral candidates will complete 240 hours of teaching during their tenure as a student; this is typically completed during a three-year period.

C. Ph.D. Coursework Requirements

This 64 credit doctoral program includes courses in Anatomy and Neuroscience that are part of the Medical School curriculum, are offered within this department or are offered by related departments on the Medical Campus. An integral part of the program is the requirement for students to participate as Teaching Fellows in Medical and Graduate school courses as part of our Vesalius Teaching Apprenticeship. The PhD program is designed to produce well-rounded biomedical scientists who expect to include both research and teaching in their career.

The PhD curriculum consists of required courses, seminars and electives as well as Dissertation Research. Overview of the 64-credit PhD program:

- Required Courses: 44-48 credits, including 4 credits of Department Seminar Courses.
- Electives and/or Research: 20-24 credits



Required Courses (Anatomy focus: 48; Neuroscience focus: 44)

- Medical Gross Anatomy *or* Systems Neurobiology 8/4Cr AN 701/ AN 810
- Medical Neuroscience 4 Cr AN 703
- Fundamentals of Cell & Molecular Neurobiology 4 Cr AN 777
- Cognitive Neuroscience *or* Biomedical Imaging Found. 4 Cr AN 811/ IM 600
- Methods in Neuroscience 4 Cr AN 718
- Advanced Neuroanatomy *or* Cells, Organs and Tissues 4 Cr AN 724/ AN 722
- Exptl. Design & Statistical Methods *or* Elementary Biostats. 2 Cr AN 704/ MS 700
- Vesalius 1: Teaching in the Biomedical Sciences 2 Cr AN 806
- Vesalius 2: Teaching Apprenticeship (*fulfilled by Teaching Fellow assignments*) 6 Cr AN 804
- Scientific Writing 2 Cr AN 803
- Professional Skills 2 Cr AN 715
- Research Colloquium (Journal Club) 2 Cr AN 802
- Two Departmental Seminar Courses (see list below) 2 Cr each

Department Seminar Courses

- Neurobiology of Learning and Memory 2 Cr AN 702
- Dynamic Modeling 2 Cr AN 820
- Neurobiology of Aging (every other year) 2 Cr AN 707
- Neurobiology of the Visual System (every other year) 2 Cr AN 807

Department Electives (*includes course from programs in Forensic Science [FS]; Forensic Anthropology [FA] and Imaging [IM]*)

- Advanced Clinical Anatomy 2 Cr AN 708
- Vesalius 3: Mentored Teaching Project (Practicum) 2 Cr AN 805
- Molecular Basis of Neurologic Disease 2 Cr MS 783
- Developmental Cognitive Neuroscience 4 Cr AN 716
- Methods of Functional Imaging of the Brain 2 Cr IM 630
- Forensic Biology 3 Cr FS 702
- Forensic Pathology 3 Cr FS 712
- Molecular Biology of Forensic DNA 3 Cr FS 720
- Human Anatomy and Osteology 4 Cr FA 712
- Advanced Human Osteology 4 Cr FA 806

Requirements for the *optional* PhD Vesalius Certificate:

Students are required to have taken at least two of the following prerequisite courses to pursue the Vesalius Certificate:

- Medical Gross Anatomy 8 Cr AN 701
- Medical Neuroscience 4 Cr AN 703
- Systems Neurobiology 4 Cr AN 810
- Cognitive Neuroscience 4 Cr AN 811



Department of Anatomy & Neurobiology
Boston University School of Medicine
Ph.D. Program Guidelines

The certificate consists of three courses/components, two of which (Vesalius 1 & 2) are included in the list of required courses for all PhD students. The program begins with a course on the development of teaching skills in the biomedical sciences. This is followed by a teaching apprenticeship (240 hours service as a Teaching Fellow in one or more of the medical or graduate required courses, above), and a Mentored Teaching Project that involves the development of a didactic lesson or exercise under the direct mentorship of experienced and award-winning faculty.

Vesalius 1: Teaching in the Biomedical Sciences	2 Cr	AN 806
Vesalius 2: Teaching Apprenticeship	6 Cr	AN 804
Vesalius 3: Mentored Teaching Project (Practicum)	2 Cr	AN 805

Example of a typical curriculum for PhD students (see required courses and options above)

Year 1: Fall

Medical Gross Anatomy or Systems Neurobiology	8 Cr/4 Cr	AN 701/AN 810
Medical Neuroscience (Credits assigned in Spring)	4 Cr	AN 703
Exptl. Design & Statistical Methods or Elementary Biostats.	<u>2 Cr</u>	AN 704/MS 700
	10-12 Cr	

Year 1: Spring

Cognitive Neuroscience and/or Advanced Neuroanatomy	4 Cr/4 Cr	AN 811/AN724
Vesalius 1: Teaching in the Biomedical Sciences	2 Cr	AN 806
Research Colloquium (Journal Club)*	2 Cr	AN 801/802
*Journal club is taken once every year but only one time for credit		
Elective(s) (see list above)	<u>2-4 Cr</u>	
	10-14 Cr	

Year 2: Fall

Fundamentals of Cell & Molecular Neurobiology	4 Cr	AN 777
Cells, Organs and Tissues (Histology) or elective(s)	4 Cr	AN 722
Scientific Writing	<u>2 Cr</u>	AN 803
	10 Cr	

Year 2: Spring (Note this is when most students take their PhD qualifying exam)

Advanced Seminar (see list above)	2 Cr	(see list above)
Professional Skills for Students in the Biomedical Sciences	2 Cr	AN 715
Elective(s)		Variable

Year 3: Fall

Research		Variable
Elective (s) (see list above)		Variable
Vesalius 2: Teaching Apprenticeship (continues to 240 hrs)	6 Cr	AN 805



Year 3: Spring

Research	Variable
Elective (s) (see list above)	Variable
Advanced Seminar (see list above)	Variable

Year 4: Spring-Fall

Research and Dissertation	Variable
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Year 5: Spring-Fall

Research and Dissertation	Variable
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Elective Courses

The student may take courses offered by the Department of Anatomy and Neurobiology and/or courses offered by other Departments at Boston University to fulfill this requirement.

1. Grades

To receive credit in any course taken as part of the doctoral degree program, students must receive a "B-" grade or better. Fulfillment of this academic level places a student in good academic standing. A grade of "C+" or lower is considered a failure. If there is a failure in one of the Basic Departmental Required Courses or Core Track Required Courses, then the student is no longer in good academic standing, and this course must be re-taken. The Division of Graduate Medical Sciences does not allow make-up examinations for graduate students (refer to the Bulletin of the Division of Graduate Medical Sciences, under Academic Policies and Procedures). If a grade of "C+" or lower occurs in eight credit hours or more a student is automatically dismissed from graduate school.

When the work of a course has not been completed within the semester of registration, the grade of "I" (Incomplete) may be given at the discretion of the instructor and depending on the reason for incomplete work. A grade of "I" can only be given if a student is doing passing work. This automatically becomes a permanent grade of "I" (unsatisfactory grade) unless the course work is completed within the following academic year. Permanent grades of "I" are interpreted as failures.

2. Course Load

During each of the first two years of the program, students are expected to register for full time status. Thereafter, research becomes a larger fraction of the student's time and students typically sign up for fewer course credits to reflect this change in commitment. A "Certified Full Time" form is submitted during the open registration period for each semester to allow students with fewer than 12 credits to be considered a full time student.

D. Qualifying Examination for Doctoral Candidates

1. Overview of the Qualifying Examination (QE)

The Qualifying Examination for Doctoral Students consists of both written and oral parts and is designed to address those qualifications that any researcher, especially in academia, requires and depends on, i.e., the ability to:

- a) Critically evaluate published data, present in many independent sources, and generalize findings available.
- b) Formulate the need for addressing a set of new research questions and defend their significance.
- c) Plan a logical research project based on his/her preliminary data and others' published data, with attention to detail and clear vision of potential problems, theoretical or methodological.
- d) Write scientific text.
- e) Present and defend their proposal orally, in front of peers, professional scientists and academics.
- f) Reveal both knowledge and critical thinking while answering questions related to the proposal.
- g) Follow the rules/forms and meet deadlines.

Typically, the Examination is given in the Spring semester of the 2nd full-time year of graduate study. By the beginning of the academic year (September), students who plan to take the Qualifying Examination have to submit a letter of intent to the Graduate Education Committee (GEC), as per GEC Guidelines.

Pre-qualifications will include sufficient Core Courses to provide a foundation for the proposal, as deemed necessary by the adviser(s) and GEC. The students will also take the **Professional Writing Skills Course** that will provide theoretical and practical grant writing skills, so that students will be prepared for the Qualifying Exam. Note: students who join the Department as part of a teaching-oriented track, should be fully prepared to present a standard bio-medical Ph.D. research project for the Qualifying Exam.

Those students who receive a GEC recommendation to take the Exam can register with the Chair of the QEC by November 30th preceding the semester in which they plan to take the exam. This will require submitting a letter stating that GEC permission to take the exam was granted and listing the title of research proposal. The letter must be signed by the student and his/her advisor in the Department of Anatomy and Neurobiology (co-signed by outside advisor, if applicable).

Failure to register or submit the materials by the stated deadlines disqualifies the student from proceeding with the examination. Once the student is registered for the QE, he/she cannot



withdraw, unless unforeseen circumstances that require a delay would be deemed significant by both the QEC and GEC.

2. Qualifying Examining Committee (QEC)

The QEC for all students enrolled in the departmental Ph.D. program is composed of five members. The Committee examiners are members of the Department of Anatomy & Neurobiology and Division of Graduate Medical Sciences or members of a Graduate School at Boston University.

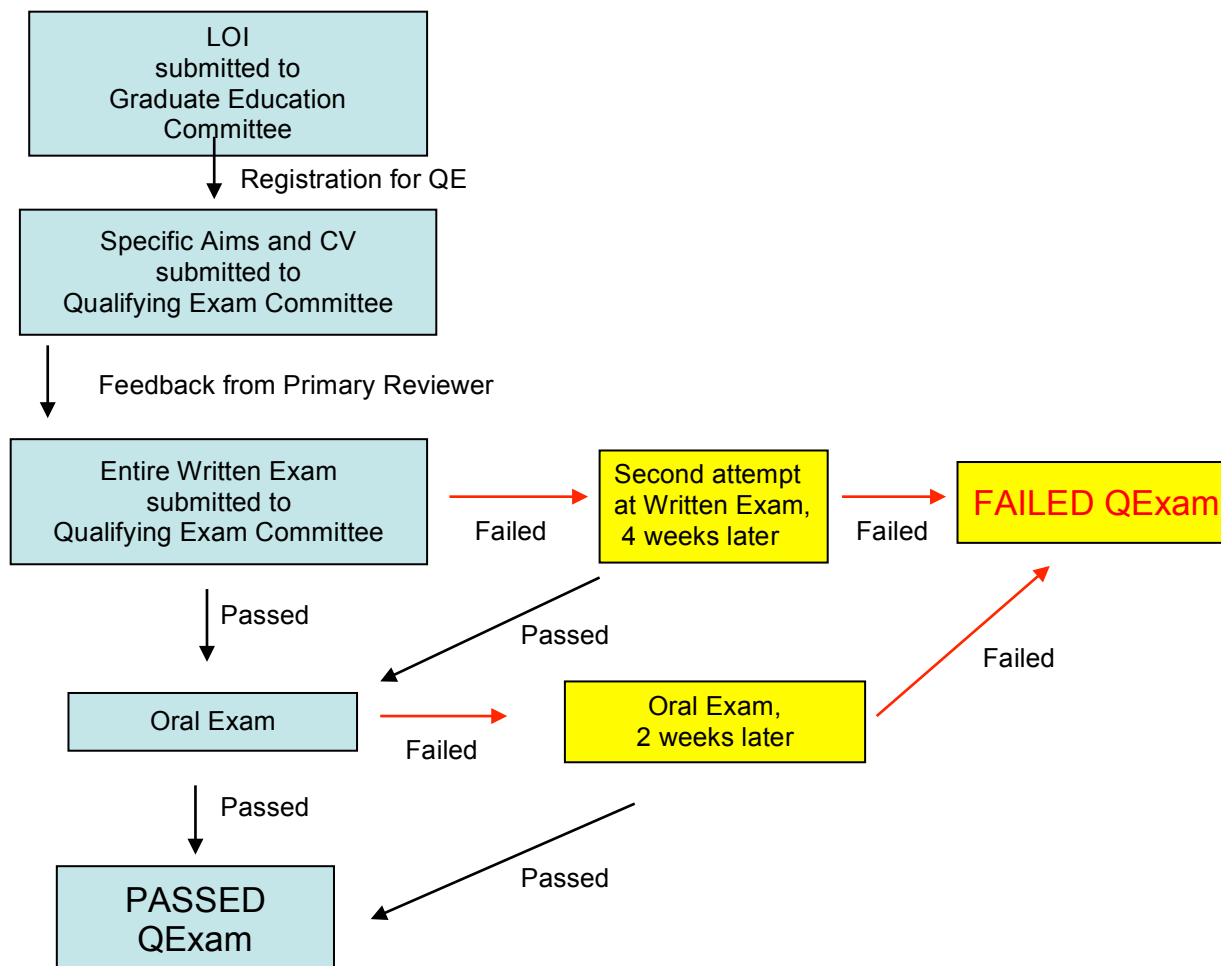
DEADLINES for 2015-2016 academic year

- | | |
|--|-----------------------------|
| 1. Letter of Intent (LOI) to GEC: | September 30 |
| 2. Registration deadline: | November 27 |
| 3. Submission of form pages and Specific Aims: | January 22 |
| 4. Submission of Written Proposal: | March 2 |
| 5. Oral Examination: | approx. week of March 16-20 |

In the first weeks of December, the students will meet with the QEC Chair and/or one of the Committee members, who will explain all procedures and requirements in detail and answer any questions the students may have at that time.

The role of the Advisor in the process: Each student is required to have an actively involved Research Advisor in the Department of Anatomy and Neurobiology. In case the student is conducting research in another Institution/Department, as part of collaboration between the Institutions, both advisers will have to be equally involved in the QE process. This will include: a) providing a letter to GEC recommending the student to take QE; b) approving the Specific Aims before they are submitted to the QEC; c) NOT being involved in the process of writing the Research Plan; c) being present at the oral portion of the QE and, if requested, being available for further discussion with the QEC of the outcomes of his/her student's presentation.

The Qualifying Exam process and time-line:



NOTE: In case a student fails the Written or Oral portion of the exam, the second (and last) attempt will be scheduled for the same year.

3. Written Examination

In order to assess the student's scientific reasoning and writing abilities, the Exam will require students to write a grant proposal as per the format of an NIH NRSA F31 proposal for a pre-doctoral biomedical research project. The application materials can be downloaded at: <http://grants.nih.gov/grants/>. Examples of previously submitted, passing written and oral presentations will be made available to students.



The proposal will be comprised of NRSA form pages, Specific Aims, Background and Significance, Preliminary Studies (this section is optional), Experimental Design and Methods, Vertebrate Animals and Literature Cited sections. While the guidelines for the size of the NRSA application as submitted to NIH differ from year to year, the format of the written portion of the QE Research Plan will be limited to 10 pages (i.e., 11 pages with Specific Aims page, and more than a current limit for “real” NRSA application).

The proposal must represent the student’s independent work; however, the students should obtain advice from their adviser on the formulation (but not writing) of the Specific Aims. During the preparation of this proposal, students may consult with fellow students, their advisor and/or other faculty with regard to scientific approaches and ideas but they may not receive any actual writing, editing or proofreading assistance.

By noon on the mid January deadline, registered students will submit the following NRSA F31 pages to the QEC: Specific Aims, Biosketch for Student and Adviser(s), and Graduate Courses completed. These will be submitted electronically via email, as one PDF file attachment to the Chair of the Committee, with an additional copy to all the Committee members. A hardcopy will be placed into each Committee member’s Departmental mailbox, by the same deadline.

Each proposal will be assigned to at least two reviewers (Primary and Secondary), of the Committee. By January 30, the students will be provided with detailed feedback regarding the Specific Aims (via the Primary reviewer), and then they may commence with preparation of the NRSA proposal (NRSA forms and Research plan). The written examination (i.e., complete NRSA application) will be due by noon, March 2 (both PDF file via e-mail and hardcopy in mail boxes).

By March 9, the exam will have been evaluated by the Qualifying Examination Committee and the students informed as to whether he/she has passed, passed with minor modifications required, or failed the written exam (requires more than 1 fail vote by the Committee). During the week of March 9, the student will receive comments/suggestions from the committee regarding their proposal (via the Primary Reviewer).

The QEC will provide oral feedback with recommendations to both the student and his/her adviser on the performance on the written (or oral) portion of the exam, independent of whether the student passed or failed the QE.

If the student passes the written exam, he/she will take the **oral exam** on the week of March 16 to 20. If minor modifications are required by the committee, these modifications can be addressed orally, at the time of the oral exam. If the student fails the written exam, he/she will not proceed to the oral exam; instead he/she will receive, in a written format, a brief list of issues to be addressed and will have one opportunity to re-write the exam within a month thereafter.

4. Oral Examination

The oral examination will take place approximately two weeks following the successful completion of the written examination. The student may practice his/her presentation in front of fellow graduate students for feedback but cannot receive assistance from his/her adviser.

A minimum of five members of the committee will be present for the oral examination. The adviser(s) are required to attend the oral examination, but cannot participate unless specific questions are directed to him/her by the examining committee.

The oral examination will consist of two parts, equally affecting the outcome of the exam:

1. The student will give a 25-minute presentation of his/her research proposal, which should be based on the NRSA grant that was completed for the written exam. The oral Power Point-based (or similar) presentation should include a brief Introduction, Specific Aims and Hypotheses, the Rationale for performing the studies, Experimental Design and Statistics, and the Significance of the proposed studies. If the research is ongoing, Preliminary Data should be presented.
2. Following the presentation, for a period of ~40 minutes, the student will answer questions posed by the members of the QEC and broadly related to the presented grant proposal. The answers should reflect sufficient knowledge acquired from undergraduate/graduate courses taken and from scientific literature studied as part of research and the QE preparation.

The student and his/her adviser will then be asked to wait in another room while the Committee members vote "Pass" or "Fail" by written sealed ballot. The decision will be based on overall performance that includes well thought out aims and hypotheses, well designed studies and proposed data analysis, the ability to properly communicate and clearly present the research proposal to the QEC and address questions posed by the Committee members. The votes will be given to the Chairperson of the committee who will then inform the QEC and subsequently the student and his/her advisor of the result.

Similar to the written examination, no more than one fail vote will be allowed to receive a Pass for the oral portion of the QE. The QEC will provide immediate feedback to the student and his/her adviser regarding the performance. To those students who would require taking the second attempt at the QE, after failing the first one, a brief list of issues to be addressed will be provided in a written format.

In the event of failure of the QE, the Graduate Student will be allowed a second presentation 2 weeks following the previous oral exam and the same rules and grading will apply.

If the student fails the second oral examination, however, they will be considered to have failed the QE as a whole.

E. Research Requirements for Doctoral Candidates

1. Overview of Research Requirements

During the first year of study, students typically become affiliated with a faculty member and his/her research laboratory. Students are encouraged to spend as much time as possible in a research laboratory during the first year. All students are expected to engage in full-time research during the summer of the first year. In subsequent years, students should aim to carry out full time research when not involved in course work, other requirements for their degree, or teaching experience. The research carried out by a student will be agreed upon with the primary research adviser and research committee members. Students must complete a satisfactory program of research, the results of which are to be incorporated into a dissertation.

Please Note: Ph.D. candidates are required to have a minimum of one first author peer-reviewed publication, based on their dissertation research, prior to their dissertation defense.

2. Primary Research Advisor

During the time the student does not have a primary research adviser, the Graduate Director will advise students on the choice of courses to be taken. Once a Primary Research Advisor has been selected, this faculty member will assume all advising responsibilities.

Ph.D. candidates should become affiliated with a faculty member and his/her research laboratory by the end of the first year. This faculty member will serve as the primary research adviser and, in this role, will supervise the student's research and advise the student on course work. However, the faculty member who initially advises the student need not necessarily be the student's adviser for the dissertation research. Doctoral candidates must make a final decision on the primary research adviser by the time the qualifying examination has been passed. This selection must be agreed upon by the student, the person selected as the primary research adviser, and the Graduate Education Committee (GEC). The proposed adviser should be able to adequately support the stipend and the research program of the graduate student.

The primary research advisor is typically a member of the regular faculty of the Department of Anatomy and Neurobiology, a faculty member of the Division of Graduate Medical Sciences and must be approved by the GEC. A faculty member of the Division of Graduate Medical Sciences in another Department may also become a student's primary research adviser if approved by the GEC. Under certain circumstances, a Special Faculty Appointee to the Division of Graduate Medical Sciences may serve as the primary research adviser if approved by the GEC. When the primary research adviser is not a full time faculty member in the Department of Anatomy and Neurobiology, then the second reader of the Ph.D. dissertation must be a member of the regular faculty of the Department of Anatomy and Neurobiology and a faculty member of the Division of Graduate Medical Sciences. Additionally, in this



circumstance, first and second readers must be appointed simultaneously. The primary research adviser is always the first reader of the Ph.D. dissertation.

3. Research Advisory Committee

Following successful completion of the Qualifying Examination, a Research Advisory Committee consisting of at least **three** faculty members will be formed for the purpose of advising the graduate student on his/her research project. This Committee will consist of the primary research adviser and two other faculty members either from the Department of Anatomy and Neurobiology or another Department in the Division of Graduate Medical Sciences or other Boston University Graduate School that best suits the needs of the student's research program. The student should meet with his/her committee **once a semester**. These meetings **are necessary for the student to receive research credit**, and they will be arranged by the student.

One of the most important functions of the Research Committee is to assess the viability and significance of the proposed research project. In subsequent meetings, the Research Committee will consider the student's research results and research plan, and advise accordingly.

The Research Committee should assist the doctoral candidate in the following ways:

- I. Provide an opportunity for the student to periodically organize his/her data and plan his/her future research directions.
- II. Provide for broader-based faculty input into a student's planning of his/her research.
- III. Provide the opportunity for the second reader to have meaningful input into a student's progress.
- IV. Help prevent possible abuses in the student/adviser relationship, such as the Primary Research Adviser using the student as a means to get his/her work done, or the student relying too heavily on the Primary Research Adviser or on the Adviser's technician.

The student should note that the Research Committee must approve the final dissertation outline and two members of the committee (first and second readers) must sign the finished dissertation. Therefore, the advice of the Research Committee should be seriously considered by the student.

4. Dissertation Prospectus/Outline

Approximately 9 months prior to the student's expected graduation date, the student prepares, in consultation with his/her primary research adviser, a Dissertation Prospectus/Outline. This



document must be approved by three members of the student's proposed Dissertation Examination Committee and the Department Chairperson. The "Dissertation Outline Approval Page" is available on the GMS website and in L-315.

The Dissertation Prospectus/Outline and Dissertation Outline Approval Page must be submitted to the Division of Graduate Medical Sciences approximately 9 months prior to the student's expected graduation date. The student **MUST** refer to the Graduate Medical Sciences "Graduation Calendar" for all Graduation deadlines. This information, along with other important graduation deadlines, can be found under "Calendars and Important Dates" on the Division of Graduate Medical Sciences website. <http://www.bumc.bu.edu/gms/>

The Prospectus should be typed double-spaced and have the following format:

- a. A title page with the name of the candidate, the proposed title of the dissertation, and the names in typescript and signatures of approval of the first and second readers, the third Research Committee member and the Department Chairperson.
- b. The text should be made up of an abstract (maximum length of 1 page), and an outline of the aims of the research, the significance of the proposed research, preliminary data that has been collected, and a description of the methods to be used.

5. Writing of the Dissertation

The format and formal requirements for a dissertation are given in material that may be obtained from the Division of Graduate Medical Sciences (Guide for Writers of Theses and Dissertations, prepared by Boston University's Mugar Memorial Library). Arrangements must be made to present one bound copy of the dissertation in its final form to the Departmental Library.

6. Dissertation Examination Committee

The Dissertation Examining Committee will be constituted according to the rules of the Division of Graduate Medical Sciences. The committee normally consists of **six** members, including the Primary Research Adviser, the second reader and a non-voting Chairperson. **Of the five voting members, one or two may be from outside the Department of Anatomy and Neurobiology. At least one member must be from an institution other than Boston University.**

Approximately 9 months prior to the final oral examination, the adviser submits the names of the Dissertation Examination Committee, selected by the student and primary adviser, to the Graduate Education Committee for approval.



7. Dissertation Defense (Final Oral Examination)

At least 3 weeks prior to the final oral examination the dissertation abstract is due in the GMS Division Office for review and approval by the Associate Dean. At least 2 weeks prior to the oral examination the Schedule of the Final Oral Examination is due in the GMS Division Office with fourteen copies of the approved abstract.

- Forms are available on the Division of Graduate Medical Sciences website and in Division Office, L-315.
- The important graduation deadlines can be found in the “Graduation Calendar” under “Calendars and Important Dates” on the Division of Graduate Medical Sciences website.

As completion of the dissertation nears, a time will be set for the student to present material included in the dissertation at a Departmental seminar. Arrangement of the seminar requires approval of the first and second readers. The Dissertation Examining Committee will also attend the seminar, and after a suitable time has been allowed for the members of the Department of Anatomy and Neurobiology and others in attendance to comment and/or ask questions, the student and the Dissertation Examining Committee will proceed with the formal oral defense of the thesis.

The Chairperson of the Dissertation Examining Committee will lead the formal oral defense. The defense is open to any faculty member of the School of Medicine. Committee members will be allowed time to ask the student questions about his/her research. When voting committee members have completed their questioning and/or when the Chairperson feels that the formal oral defense should be concluded, the student will be asked to wait in a nearby room while the committee members vote. The student will then be called back into the oral defense room and informed of the committee’s decision. If corrections to the dissertation are required, then a timeline for making these corrections will be outlined by the committee Chairperson. No more than one “Fail” vote will be allowed for the student to receive a “Pass” of the oral defense. If the student fails the oral defense of the dissertation, then the committee will recommend a remedial course of action, which must be approved by the Graduate Education Committee.

One bound copy of the final thesis must be provided by the student for the Anatomy & Neurobiology Department’s library. Students have traditionally also provided each member of their committee with bound copy and should check with their committee members to determine whether these additional copies will be required.

Acme Binding is a recommended vendor for binding services. They accept submission of orders electronically, or at their Charlestown, MA location.

More information can be found on their website:

<http://www.acmebinding.com/thesis-binding/>



F. Teaching Requirements for Doctoral Candidates

Ph.D. candidates are required to complete 240 hours of teaching. This requirement is typically fulfilled during a three-year period with students teaching 80 hours per year for three years.

Each year the student will be given the opportunity to request his/her top three teaching choices at the Annual Student Reviews. The Graduate Education Committee will then review all requests and, in consultation with Course Directors, will determine teaching fellow assignments based on student seniority, student choice and other matters that impact student course work/ thesis writing. The Graduate Education Committee will do their best to match a student with his/her preferred teaching assignment. The Graduate Education Committee makes the final decision regarding teaching assignments.

The following Departmental courses are available for graduate student teaching assignments. As shown, each course has a specific number of hours allocated to it.

- Cellular Organization of Tissues—90 hours
- Medical Neuroscience— 20 hours
- Gross Anatomy – each section 40 hours
- Anatomy for Dental students – 40, 80 or 100 hours
- Systems Neurobiology – 80 hours
- Cognitive Neuroscience – 80 hours
- Methods in Neuroscience – 80 hours

The teaching responsibilities in each course are determined by the Course Directors and may vary among the courses.

G. Assessment of Doctoral Candidate Progress

During the spring of each academic year, the student and his/her adviser will meet with the Graduate Education Committee (GEC) in the Annual Student Review. The review is a forum for the student to highlight and explain their academic, research, teaching, and service accomplishments over the past year, and to detail plans for the coming year. This meeting also allows for direct oversight of the Committee on the timely progression of each student through their degree program, and to maintain the academic, research and professional standards of the Department, and it serves as an environment in which students may ask questions or voice concerns.

Prior to the meeting, each student will submit a form to the GEC that details the past year's coursework, research performance, teaching performance, and service. The student should fill this form out in conjunction with his or her adviser prior to submitting it to the Committee; at the very least, the student and adviser should have a meeting prior to the annual review to discuss past academic and research performance, achievement of goals, future or modified goals. The adviser should plan to attend the meeting with the student, if at all possible. Students are also required to submit course evaluations of all courses taken in the academic year.

The format of the annual meeting typically begins with the student presenting his/her activities over the previous year, and the committee will ask questions as needed. To that end, having a short statement prepared as to the events of the previous year and plans for the coming year is useful. The student should be prepared to answer the following questions (as appropriate):

1. What progress was made in the previous year with respect to a) course requirements; b) research progress; c) professional development, and; d) service?
2. If performance in class or in research did not fulfill expectations of the student, adviser or committee, what will be done in the future to ensure expectations are met?
3. What are the goals of the student in the coming year for a) courses; b) research progress; c) professional development, and; d) service?
4. What is the timeline for programmatic completion and what are the student's future plans?

Teaching assignments for the next academic year will also be discussed; however, student teaching assignments are typically not finalized at this meeting.

H. Department and Graduate Student Seminars and Journal Club

- a) Graduate student attendance at all Departmental Seminars is **mandatory**. The only exception to this requirement is when attendance at a seminar conflicts with attendance at a course taken for credit.
- b) One Departmental seminar each year will be arranged and hosted by the graduate students themselves, using the Raviola Seminar Fund to cover the expenses involved.
- c) Graduate students are required to give a presentation at least once a year to the department before their Dissertation Defense
- d) All graduate students in the Department of Anatomy and Neurobiology are required to complete 2 credits of Journal Club (GMS AN 801/802). Additionally, all students must participate in Journal Club during either the fall or spring semester each academic year even though credits will only be earned once. **Attendance at Journal Club is mandatory.**

I. Graduate Education Committee (GEC)

The GEC directs and oversees the graduate programs within the Department of Anatomy and Neurobiology. Its responsibilities include, but are not limited to: admissions decisions, policy-making, the establishment of academic requirements, the resolution of disputes and advice on the administration of programs (e.g. training grants) affecting graduate students. The Committee consists of the Department Chairperson, the Graduate Director and a minimum three other faculty members. Ideally, the composition of the committee will include members that represent the broad research and teaching expertise in the Department and at least one senior faculty member.



The Graduate Director or other member of the GEC will advise students on the choice of courses to be taken prior to the student selecting a primary research adviser.

The GEC has the power to dismiss students for reasons of academic underachievement, poor conduct or lack of professionalism. The decision to dismiss a student is made by the Graduate Education Committee. The student may appeal a decision of dismissal to the Chairman of the Department and/ or the Ombudsman who presents the student's case to the GEC.

J. Department Graduate Student Organization

During the last week of the academic year, all the Department Graduate Students will be responsible for: (1) recommending an Ombudsman, (2) planning the annual Raviola seminar and reception, (3) selecting representatives to designated Department Committees and (4) acting as the primary spokespersons for graduate student concerns.

K. Ombudsman

Although students may always approach the members of the Graduate Education Committee, Graduate Adviser or other members of the faculty with concerns, a member of the faculty from the Department will serve as an Ombudsman to mediate any dispute or hear any concerns from those who wish to discuss an issue outside of the normal administrative structure of the Department. Interactions with the Ombudsman will be held in confidence, unless requested by the student or if there is a concern of safety. The Ombudsman will be selected by the Graduate Students on an annual basis and the GEC will be informed of the selection.

L. Miscellaneous

1. Tutoring, Extramural Teaching or Other Employment

Students may participate in tutoring or extramural teaching with written permission from their adviser. When undertaken, such activities should not exceed six hours per working week. Additionally, should such activities be undertaken, NIH guidelines require that all Ph.D. candidates participate in research activities for at least 40 hours per week. Excessive activities outside the doctoral program are discouraged, as they may impair the student's successful pursuit of a doctoral degree. International students need to check with the ISSO (International Student and Scholar Office) and must comply with all immigration and visa requirements.

2. Vacations and Leaves of Absence

In addition to the standard Medical School holiday and intersession dates, students are entitled to a two-week vacation period. The timing and length of the vacation period shall be approved by the student's adviser. Normally, students should expect to engage in research during the summer months. Spring break is not observed for graduate students.



Department of Anatomy & Neurobiology
Boston University School of Medicine
Ph.D. Program Guidelines

The Bulletin of the Division of Graduate Medical Sciences, under Academic Policies and Procedures, describes the procedures involved with Leaves of Absence.



II. GUIDE FOR M.D./PH.D. CANDIDATES

A. Overview of the M.D. /Ph.D. Program

Candidates in the M.D./Ph.D. program must be accepted into the Ph.D. portion of the program by the GEC in the Department of Anatomy and Neurobiology. This acceptance can take place either when the student first applies for entry into the joint program, or it can occur after the student has entered the program and is undertaking the first two years of the Medical School program for M.D. students. In the latter instance the research adviser with whom the student is proposing to undertake their dissertation research should apply in writing to the Graduate Education Committee to have the student accepted into the Departmental Program.

Although M.D./Ph.D. students generally follow all the requirements expected of Ph.D. candidates, there are a few additional considerations. M.D./Ph.D. students should be aware of the following to make the research years productive and minimize problems that may be encountered during the transitions from Medical School to Graduate School and vice versa.

M.D./Ph.D. students are on an extremely tight time schedule if they want to take all required courses and exams, finish their research, write their dissertation, and defend their thesis in the three years suggested for M.D./Ph.D. students. The student should understand that the three years is generally a minimum, and many M.D./Ph.D. students actually take three and a half to four years (or more) to complete their thesis projects. They should carefully plan and budget time wisely to make the most efficient use of their graduate school years.

The M.D./Ph.D. students receive Pass (P) or Fail (F) grades as any other medical student for the first two years. Only Pass (P) grades are acceptable in lieu of Graduate School grades. During the graduate years, they will receive letter grades for all courses taken for credit as do Ph.D. students.

The transition from Medical School to Graduate School generally occurs without too much difficulty. Most problems are logistical and relatively minor. For example, the student needs to make sure that the school mail gets forward from the BUSM mailroom to the Department. However, the transition back to medical school takes a little more effort to make sure that it goes smoothly. In the Spring of the last year in Graduate School, the student needs to inform the Medical School registrar's office that they will be returning to medical school for rotations. Also it is necessary to check that all Division of Graduate Medical Sciences requirements have been completed before returning to clinical rotations to avoid complications when obtaining both degrees at graduation. There are special clinical skill review courses for M.D./Ph.D. students to aid the transition. All of this information and other general requirements and expectations for M.D./Ph.D. students is described in detail in the Division of Graduate Medical Sciences.



B. Detailed Description of Course Requirements for M.D./Ph.D. Candidates

M.D./Ph.D. students are expected to complete a total of 32 credits as part of the Ph.D. component of the degree, in addition to their medical school credits: 6 credits from the Basic Department Required courses, 6 credits from the Advanced Departmental Seminar courses and 20 credits from Electives or Research.

M.D./Ph.D. students typically take 10 credits their first year.

Basic Departmental Required Courses (6 credits):

- Experimental Design and Statistical Method/ Elementary Biostatistics (2 credits) – GMS AN 704, GMS MS 700
- Journal Club (2 credits) – GMS AN 801/802
- Professional Skills for Students in the Biomedical Sciences (2 credits) – GMS AN 715

Advanced Departmental Seminar Courses (6 credits):

The M.D./Ph.D. candidate is required to take 6 credits of advanced departmental seminar courses offered by the Department of Anatomy and Neurobiology. A course offered by another Department in the Division of Graduate Medical Sciences may be used to partially fulfill this requirement if it is deemed relevant to the student's research and approved by the Graduate Education Committee. For a detailed list of course offerings please refer to Appendix, page 27.

Elective Courses

The student may take courses offered by the Department of Anatomy and Neurobiology and/or courses offered by other Departments on the Medical Campus to fulfill this requirement (see Appendix page, 27).

III. APPENDIX: Advanced Departmental Seminar Course and Electives

Advanced Courses are high-level small group courses that investigate the cutting edge of a specific topic. Such a course should be highly intensive and rely on primary literature. The Department currently offers 9 advanced courses every one or two years (see below). Students may substitute courses in other departments for advanced courses, but must petition the GEC **prior to** signing up for the course. The petition should include the syllabus and schedule for the proposed course. Students may also pursue two other options:

- (1) Students may choose to have two (2) directed departmental journal clubs serve to take the place of one 2 credit advanced course. Students must arrange this situation with the instructors and the GEC Chairman ahead of time, and a grade will be given.
- (2) Students may petition a faculty member to hold a directed study in a particular topic. The faculty member should consult the Chairman of the GEC for general guidelines. The syllabus should be submitted and approved prior to the course being offered.

- Advanced Clinical Anatomy (2 credits) – GMS AN 708
- Autism: Clinical and Neuroscience Perspectives (2 credits) – GMS AN 713
- Neural Development and Plasticity (2 credits) – GMS AN 709
- Neurobiology of Aging (2 credits) – GMS AN 707
- Neurobiology of the Visual System (2 credits) – GMS AN 807
- Vesalius Module Teaching Practicum –I (variable, 2-3 credits) – GMS AN 805
- Methods of Functional Imaging of the Brain (2 credits) – GMS IM 630
- Introduction to the Neurobiology of Education (2 credits) – GMS AN 720
- Molecular Basis of Neurological Diseases (2 credits) – GMS MS 783
- Neurobiology of Learning and Memory (2 credits) – GMS AN 702

The following Departmental courses may NOT be used to fulfill the Advanced Departmental Course requirement; however, they may be taken in partial fulfillment of elective credits.

- Teaching in the Biomedical Sciences (2 credits) – GMS AN 806
- Vesalius Module Teaching Practicum –II (variable, 2-3 credits) – GMS AN 805
- Forensic Pathology (3 credits) – GMS FS 712
- Forensic Anthropology (2 credits) – GMS FS 705
- MRI Principles, Methods and Application to Biomedical Research (4 credits) – GMS IM 610
- Introduction to Interdisciplinary Systems Science: Dynamic Modeling (2 credits) GMS AN 820
- Bioimaging Foundations (4 credits) – GMS IM 600
- Methods in Neuroscience (4 credits) – GMS AN 718
- Systems Neurobiology (4 credits) – GMS AN 810
- Cognitive Neuroscience (4 credits) – GMS AN 811
- Medical Gross Anatomy (8 credits) - GMS AN 701/501S



Post-Qualifying Exam

Post-Qualifying Examination Policies and Procedures

- 1) Students are required to form a three-person research advisory committee no later than **May 1** in the term they pass their qualifying examination. The names of members must be submitted to the Graduate Education Committee for review and approval.
- 2) One member of the Qualifying Exam committee will attend a research advisory committee as an **ex officio member** for at least the first 2 or 3 meetings, to ensure that the research is on track. This could be continued longer if deemed necessary by the Graduate Education Committee. Any concerns would be reported to the Graduate Education Committee for resolution.
- 3) Students are required to hold their first research committee meeting before the end of the next semester following passing of the qualifying exam. Subsequently meetings must be held once each semester. These meetings are mandatory and holding them before the end of the semester will be necessary to receive a "passing" grade for registered research credits. Scheduling these meetings will be facilitated by the department office which would solicit available dates from the student first and then create a calendar poll to find a time that all members could attend and arrange a room with AV as needed.
- 4) The Graduate Education Committee may maintain a "tracking sheet" that will be used to document the discussions, issues, plans and progress of each dissertation research committee meeting. This will be filled out by the *ex officio* Qualifying Exam committee member for the initial meetings and later by someone on the committee other than the major adviser. It will be submitted to the Graduate Education Committee for review and, if necessary, discussion with the student and major adviser.
- 5) After passing the QE, all students will be required to present to the Department once each year, a 20 minute mini-seminar (typically 2 students are scheduled to present an "In-House" seminar at our regular Department Seminar time slot). This presentation may start out as summaries of the research problem and approaches, and then become more data driven as the dissertation research progresses. This provides presentation experience for the student and allows the Department to become familiar with and comment on the dissertation project. The order of presentations each year are outlined roughly by the GEC but actual scheduling would be done by the Department Office in concert with the Seminar Series Coordinator.



Graduation Checklist

Please note: Ph.D. students must have 64 graduate credits of course work and research in order to graduate. In addition, all Ph.D. students must sign up for 2 credits of Continuing Full Time study the semester they graduate:

MS981 (fall) and MS982 (spring) - are for continuing full time with courses.

MS985 (fall) and MS986 (spring) - are for continuing full time without courses.

9 to 12 months prior to defense

- ☐ Submit Prospectus to GEC, GMS Division
- ☐ Submit names of Thesis committee for final approval to GEC

3 months prior to defense

- ☐ Complete diploma application – to GMS
- ☐ Thesis complete and submitted to thesis committee

2 months prior to defense (at very latest)

- ☐ Final pre-defense meeting (written thesis must be completed prior to meeting and committee members given time for evaluation)

1 month prior to defense

- ☐ Dissertation Abstract form submitted to GMS, GEC
- ☐ Oral Final Exam Schedule for submitted to GMS, GEC
- ☐ Special Service form submitted to GMS, GEC

Defense

After Defense

- ☐ Written thesis with signed signature pages submitted to the Division of GMS by appropriate due date



Teaching Fellow Expectations

The following was prepared by the Course Directors to describe the requirements and expectations for graduate students serving as Teaching Fellows (TF) in their respective courses. Please contact the Course Director if you have any specific questions or concerns.

GMS AN 701 Medical Gross Anatomy, Course Director: Ann Zumwalt, Ph.D.

Graduate student Teaching Fellows (TF) in Medical Gross Anatomy are an invaluable part of the anatomy teaching team. They participate fully in lab teaching while honing their anatomy knowledge through independent study and dissection. In addition, they are actively mentored and guided in their development as teachers by the Gross Anatomy faculty.

Graduate student TFs are expected to help to prepare prosections (demonstration dissections), teach during laboratory class time, give review sessions, and help set up and run the practical exams.

Prosections

When preparing a prosection, a TF does the same dissection the students will perform during class. In addition to creating a demonstration preparation for the anatomy students, this exercise helps TFs confidently understand and teach the material during class. TFs will prepare the prosections during the days leading up to the scheduled lab. TFs and fourth year medical student prosectors are expected to work together to prepare and present to the faculty a brief presentation of the lab material during the 30 minutes before lab begins.

Teaching in Lab

All TFs are required to attend all lab sessions during their assigned block. They are assigned a pod (area of the lab) for which they are responsible. During lab sessions TFs will circulate around their assigned pod and help students navigate the dissection and answer questions about course content. During these times TFs always work under the supervision of a faculty member.

Review Sessions and Exam

During the week leading up to the exam, TFs are expected to offer small group review sessions for the anatomy students. The number, length and frequency of review sessions varies. On the day of the exam, TFs are expected to be available from 7:30am-3:30pm to help set up and run the practical exam.



GMS AN 703 Medical Neuroscience, Course Director: Jarrett Rushmore, Ph.D.

1. Attend all meetings in preparation for Neuroanatomy Labs.
2. Fully understand and be able to explain all of the material in the laboratory manual and be able to explain questions and answers regarding practical exam material (based on quizzes and old practical exams posted at Blackboard).
3. Assist the laboratory Instructor with regard to preparation for all labs and help ensure that labs run smoothly (before lab begins: be sure projectors are present and in working order; buckets with wet material are clean and full; all support material including gloves are present). Arrive at lab at least 10 minutes early to ensure that everything moves smoothly and promptly.
4. At the end of laboratory sessions ensure that the teaching material is put away properly and that the laboratories are left in clean and neat condition.
5. Help grade practical exams- midterm and final (at course director's discretion).

Optional Opportunities

1. TF's can help formally present lab material at the Instructor's discussion. These presentations can include presentation of lab material and/or giving the introductory quizzes.
2. TF's can assist the course director in sorting through brain material prior to the commencement of the course.
3. TF's can assist in multiple aspects of the course in addition to the aforementioned by special arrangement with the course director.

GMS AN 722 Cellular Organization of Tissues, Course Director: Louis Toth, Ph.D.

As per LCME guidelines for Teaching Fellows (TFs) in medical courses, our TFs must be familiar with the educational objectives of the course, and be prepared to teach and evaluate the students. TFs for histology are responsible for supporting the learning of the students in the course. Their prime responsibilities are: (1) to know the material and how we are teaching it (2) to facilitate the learning of the students and (3) to aid the faculty in the administration of the course.

Qualifications for TFs: TFs must have performed well in the BUSM histology course in a recent term. (Grade or B+ or better and permission of the course director are required.)

Duties of TFs:

(1) TFs are responsible for reviewing the material, and having the necessary understanding to teach it. They are encouraged to attend the course lectures, and expected to spend time each week reviewing their notes and the textbooks prior to the scheduled staff meetings. They are responsible for attending all meetings of the course faculty, in which we discuss the quizzes and the teaching strategy for the labs and discussions. The faculty may provide TF review sessions for the explicit purpose of reviewing course material, and discussing the progress of students.

TFs meet once before the beginning of the course to review the course objectives, and to receive guidance about their roles in the teaching and evaluation of students.

(2) Tutoring takes place mainly in TF office hours, scheduled at a regular time at the TF's discretion, but usually the day before each discussion and with sensitivity to the course schedules of all students in the course (GMS and pathway).

TFs are also expected to help faculty guide individual students one-on-one during discussion sessions as planned. TFs are expected to provide some outside assistance (within limits) for the students in their lab, and are encouraged (but not required) to join the ranks of official paid tutors for the course.

(3) TFs assist with running of the discussion sessions, including learning and using the teaching technologies. These currently include lights & projector, SMART Sync, SMART Tools, TurningPoint Responseware, and BACUS Virtual Microscopy. TFs attend an orientation session at the beginning of the semester in which the use of these technologies is demonstrated. TFs assist on examination days with enforcing proper conduct of the students, and with simple, procedural questions including computer issues. Currently these involve knowing the test administration procedures of Blackboard-8 and SofTest by ExamSoft. TFs are NOT responsible for creating or checking the content of the course exams.

Assessment of TFs

The performance of the TFs will be assessed through (1) observation by faculty throughout the course, (2) a written performance evaluation at the conclusion of the course, and (3) student written evaluations included in the students' end-of-course feedback.

Summary of time commitment

TF hours	AN722 (Fall)	MS123 (Spring term)
Labs	3 hrs/week	6 hrs/week
Exams	5 hrs/exam x 2 exams	5 hrs/exam x 3 exams
Office hours	2 hrs/week	4 hrs/week
Staff meetings	1 hr every weeks	2 hrs/week
Preparation	as needed	as needed



GMS AN 718 Methods in Neuroscience, Course Director: Jean-Jacques Soghomonian, Ph.D.

TFs in the course are expected to attend each lecture. They will also be expected to correct a weekly one-page summary of two research articles. The students taking the course will write the summary and the TF will be responsible for the correction of all the copies. The TF will also provide feedback to the students about the quality of their summary.

GMS AN 810 Systems Neuroscience, Course Director: Doug Rosene, Ph.D.

1) Attend lecture and discussions for the four hours of class over the 15 weeks of the semester. (Estimated total of ~60 hours for the semester.)

2) Read and grade the weekly two page double-spaced papers that are a summary and critique of on an assigned research article - total of about 15 papers for each of 15 weeks. This requires reading and if necessary researching the assigned paper. (Estimate of up to 12 hours per week for 15 weeks = ~ 180 hours for the semester.)

3) Grade a variable number of weekly quizzes – short answer, 5 questions. (Estimated total of ~30 hours for the semester.)

4) Meet with students as needed and participate in evaluating discussion performance and assigning final grades. (Estimated total of ~10 hours for the semester.)

5) Total number of hours over 15 weeks of the semester will be up ~ 280 hours or an average of ~18 hours per week.

GMS AN 811 A1 Cognitive Neuroscience, Course Director: Mark Moss, Ph.D.

- This course meets on both the Charles River and Medical campuses (Tuesdays and Thursdays, respectively), and generally has two teaching fellows, one from each campus.
- TFs are expected to attend two course lectures per week (4.5 hours total) and hold weekly office hours.
- On days that laboratories are held in lieu of a lecture, TFs will assist the laboratory manager in setting up testing rooms, supervising data collection, and compiling the data for distribution.
- Please note TFs should meet with the lab manager a day or two before the lab to run through the experiments
- Students will submit weekly lab reports, and TFs are expected to collect these reports grade them in coordination with the instructors and return them to the students within 1 week's time
- TFs will use Blackboard to post announcements, class materials, and grades.

MD-511 Anatomical Sciences-II, Course Director: Elizabeth Whitney, Ph.D. Dental Gross Anatomy

Graduate teaching fellows (TFs) in the Dental Gross Anatomy course will have the opportunity to perform cadaver dissection and present their dissection to small groups of first year dental students. TFs will organize their own laboratory dissection presentation(s) and will present this to faculty in the days prior to the scheduled laboratory. Faculty will mentor TFs through this process to ensure that all presentations are clear and accurate. In the week preceding each examination, TFs will give review sessions in the laboratory. TFs will also participate in setting-up and administering the practical examinations.

40 Units

Example #1: *

- Lab 1: Thoracic wall, mediastinum, pleural cavities, heart, lungs, diaphragm
- Lab 2: Anterior abdominal wall and abdominal organs
- Practice Practical: Practice practical set-up (morning)
- Practical Exam 1: Practical examination set-up (morning); Proctor exam (afternoon)
- Review Sessions: 3 sessions x 1 hour

Example #2: *

- Lab 5: Face, parotid region, suprahyoid region
- Lab 6: Temporal/ infratemporal fossa, retropharyngeal space, cranial contents
- Lab 7: Pterygopalatine fossa, nasal and oral cavities, pharynx, larynx and self study of larynx on models
- Practical Exam 3: Practical examination set-up (morning)
- Review Sessions: 3 sessions x 1 hour

80 Units

Example #1: *

- Lab 3: Structures of the neck
- Lab 4: Axilla/ brachium
- Practical Exam 2: Practical examination set-up (morning); Proctor exam (afternoon)
- Review Sessions: 3 sessions x 1 hour
- Lab 5: Face, parotid region, suprahyoid region
- Lab 6: Temporal/ infratemporal fossa, retropharyngeal space, cranial contents
- Lab 7: Pterygopalatine fossa, nasal and oral cavities, pharynx, larynx and self study of larynx on models
- Practical Exam 3: Practical examination set-up (morning); Proctor exam (afternoon)
- Review Sessions: 3 sessions x 1 hour
- * Note: The above are examples only.



Student Committee Position Descriptions

Graduate students are encouraged to participate in service activities within and outside of the department.

Alumni Coordinators: These members will update the department's alumni list and the alumni page on the department website. They will also communicate with alumni to gather current information and provide them with current events within the department. Coordinators will invite one or more alumni for a seminar or a career day.

Graduate Medical Science Student Organization (GMSSO): Members will attend monthly meetings to organize events for graduate students on the medical campus. This includes orientation, BBQ, and volunteer events.

Newsletter: This group of students will gather articles from faculty, staff, and students to present in a newsletter form about the recent news of the department. Articles typically include recent awarded grants, new students and/or faculty, conference updates, recent publications, presentations and a report from the chairman.

Mentors: A mentor is typically a student who has been in the department for two or more years. Mentors may be paired with one or more students. Their primary role is to provide mentees with basic information and to answer any questions a new student may have.

Raviola Memorial Seminar: Dr. Raviola was an outstanding scientist in our department. In her honor, each year a group of graduate students choose a speaker typically within the field of vision. Students choose the speaker and organize the day. Typically there is a time to meet with faculty, lunch with students, and a reception following the seminar.

Seminar Coordinators: This is the responsibility of first year students. Students will need to purchase food ahead of time for the weekly department seminars. They are responsible for set up and clean up of the library where the food is served.

Social Committee: Students organize social gatherings for the graduate students of the department. This is a "get-to-know" each other outside of the classroom. In the past, events have included movies, bowling and game nights.

Student Representatives: It is the responsibility of these two students to organize the graduate students and report to the faculty any issues that may have come up.



Important Dates

Fall 2015

Classes Begin	Wednesday, September 2, 2015
Holiday, Classes Suspended	Monday, September 7, 2015
Holiday, Classes Suspended	Monday, October 12, 2015
Substitute Monday Schedule of Classes	Tuesday, October 13, 2015
Parents Weekend	TBA
Thanksgiving Recess	Wednesday, November 26, 2015 Sunday, November 29, 2015
Classes Resume	Monday, November 30, 2015
Last Day of Classes	Thursday, December 10, 2015
Study Period	Friday, December 11, 2015 Monday, December 14, 2015
Final Exams Begin	Tuesday, December 15, 2015
Final Exams End	Saturday, December 19, 2015

Spring 2016

Classes Begin	Tuesday, January 19, 2016
Holiday, Classes Suspended	Monday, February 15, 2016
Substitute Monday Schedule of Classes	Tuesday, February 16, 2016
Spring Recess	Saturday, March 5, 2016 Sunday, March 13, 2016
Classes Resume	Monday, March 14, 2016
Holiday, Classes Suspended	Monday, April 18, 2016
Substitute Monday Schedule of Classes	Wednesday, April 20, 2016
Last Day of Classes	Friday, April 29, 2016
Study Period	Saturday, April 30, 2016 Monday, May 2, 2016
Final Exams Begin	Tuesday, May 3, 2016
Final Exams End	Saturday, May 7, 2016
COMMENCEMENT Weekend	Friday, May 13, 2016 Sunday, May 15, 2016

Please note: These are the important dates for the Graduate Division. Since many of our classes are in the Medical School, some of these holidays DO NOT APPLY. The Medical School Calendar (BUSM, Office of Academic Affairs) has the schedule for joint courses such as Gross Anatomy, Neuroscience, and Histology: <http://www.bumc.bu.edu/oa/academic-calendars/>.



Good Things to Know

Getting Around Town

“The Bus”, is a free shuttle running between the medical and Charles River campuses (runs every ½ hour during the academic year, every 12 minutes during rush hour). You can find a detailed schedule at: <http://www.bu.edu/thebus/> and on the “BU Mobile” App.

The following links provide information about bus passes, public transportation and parking:

http://www.bu.edu/parking/transportation/semesterpass_fall/

http://www.mbtta.com/schedules_and_maps/bus/

<http://www.bumc.bu.edu/parking/>

Numbers of Cab Companies

- Boston Cab (617) 536-5010
- Checker Cab (617) 536-7000
- City Cab (617) 536-5100
- ITOA (617) 825-4000
- Metro Cab (617) 782-5500
- Town Taxi (617) 536-5000

Maps

The historic city of Boston is not built on a grid. The streets and intersections can be confusing. Purchasing a map of Boston will definitely help you find your way around, be it by bus, car, or on foot.

Useful links:

Subway, Bus, Commuter Rail Maps and Schedules: www.mbtta.com

Boston University Maps and Directions: <http://www.bu.edu/maps>

Where can I work out?

(1) Boston University Fitness and Recreation Center (<http://www.bu.edu/fitrec/index.shtml>).
Free for Full Time Students.

(2) South End Fitness <http://www.southendfitness.org/index.htm>

Free personal fitness assessment with BMI with appointment.

Use of basketball court, pool, exercise studio, weights, and cardio machines.

\$180/year, must contact Dianna Rivera in the GMS office (617-638-5255) for more details.



Places to Eat

There are dining facilities at the Medical Center, in addition to restaurants and convenience stores in the area. There are also vending machines associated with all of the BUMC facilities.

On Campus:

Chequers 80 E. Concord St. (Basement of L building)
Menino Pavilion Cafeteria @ Boston Medical Center, 850 Harrison Ave.
Newton Pavilion Cafeteria @ Boston Medical Center, 88 E. Newton St.
Campus Convenience, 700 Albany St.
Dental School Cafeteria, 100 E. Newton St.
Dunkin' Donuts, 850 Harrison Ave. (Hospital lobby) #3
Outtakes Quick Cuisine, in the lobby of Menino Pavilion and Newton Pavilion
MG's Café, Doctors Office Building, 720 Harrison Ave.

Nearby Locations:

Andre's Café, 809-811 Harrison Ave.
Flour, 1595 Washington St.
Mike's City Diner, 1714 Washington St.
Equator (Thai food), 1721 Washington St.
Estragon Tapas Bar/Las Ventas, 700 Harrison Ave.

Other ideas for a great dinner out...

House of Siam, 542 Columbus Ave.
647 Tremont, 647 Tremont St.
Sorella's (in Jamaica Plain) 388 Centre St (between Day St & Perkins St)
Giacomo's, 431 Columbus Ave (between Braddock Park & Holyoke St)
Legal Seafood, The Prudential Center, 800 Boylston Street
Orinoco, 477 Shawmut Ave.

Bars:

Clery's – 113 Dartmouth St., (617) 262-9874

A popular hangout due to its size and close location. It has a room where people can hang out/chat as well as a bar and dance floor downstairs. Drink prices are reasonable.

Jillian's – 145 Ipswich St. (near Fenway Park), (617) 437-0300

This is a huge bar on the infamous Landsdowne St. which has pool tables, bars, and a bowling alley.

Faneuil Hall – This is a historic part of Boston that happens to be packed with some great bars and clubs. Find details at: <http://www.faneuilhallmarketplace.com>



Free/Cheap Stuff Around Boston

Many Boston museums offer discounted or free admission for students.

Sam Adams Brewery Tour – 30 Germania Street 02130 (Jamaica Plain)

Cheap concerts at small venues like Paradise Rock Club near the BU Charles River Campus or The Middle East in Central Square. Check out <http://www.tourfilter.com/boston/homepage> to look for your favorite bands.

Free Salsa dancing/lessons can be found all over the city. Some include Mojitos (theater district) and Masa (439 Tremont St.).

Things to do and places to visit:

- Boston Museum of Science, a great place from dinosaurs to space travel.
- New England Aquarium, explore the ocean and learn about marine conservation.
- Boston Commons and Public Gardens, a beautiful place to relax and have a picnic, or ice skate at The Frog Pond in the winter
- Harvard Square (Cambridge), filled with excellent restaurants and shopping.
- Isabella Stewart Gardner Museum, in the Fenway area, features a fine art collection.
- The USS Constitution, the Nation's oldest naval vessel.
- Duck Tours; explore Boston in a World War II amphibious vehicle.
- Museum of Fine Arts, Boston's oldest, largest and best-known art museum.
- Institute of Contemporary Art, features cutting-edge contemporary painting, sculpture, architecture, film and photography.

Public Safety

The BUMC Public Safety Department is staffed 24 hours a day, 7 days a week. There is one Command and Control Center located at 750 Albany Street. Service calls for security, facilities, and emergency response are dispatched from this location, and can be reached at (617) 414-4444.

Contact the Command and Control Center to report suspicious and unusual activity. The Public Safety Desk Officer will dispatch an officer to respond to the problem immediately.

Incident Reports

The Public Safety Department encourages all employees and students to report suspicious behavior and / or criminal activity to the Command and Control Center at (617) 414-4444 as soon as possible. The Public Safety Department will document all reported incidents and forward those in need of further investigation to the department's Investigations Unit. Public Safety Department incident reports are the confidential properties of BUMC and copies will only be released with the approval of the Office of General Counsel. Requests for copies of



Public Safety Department incident reports should be directed to Public Safety Administration at (617) 414-4413

Lost and Found

The Public Safety Department documents and maintains custody of all recovered property at the medical center. Please contact the Command and Control Center at (617) 414-4444 if you find property. An Officer will be dispatched to secure the property and attempt to return it to its owner. In the event that you should lose or misplace property or if property is stolen from you, please contact the Command and Control Center at (617) 414-4444 to report the loss. The Desk Officer will dispatch an officer to meet you and document your loss if necessary.

Public Safety Escorts

The Public Safety Department will provide vehicular or pedestrian escorts to the garages, lots and surrounding medical center buildings during night and weekend hours upon request. Escorts are subject to availability by calling the Command and Control Center at extension 4-4444. The Public Safety Department recommends that you utilize the shuttle services available to you that transport to the garages, lots, surrounding medical center buildings and authorized MBTA stops. Click the shuttle services index for more detailed information.

Emergency Call Boxes

The Public Safety Department has installed emergency call boxes at a variety of locations within and around the perimeter of the medical center. Emergency call boxes are blue metal boxes that are easily identifiable by blue lights located above the box. These call boxes contain auto-dial phones that connect the caller to the Command and Control Center once the emergency button is pushed. These phones should be used in emergencies only and automatically disconnect after 3 minutes. The location of the call will be automatically be sent to the Command and Control Center for dispatch and response purposes.

Identification Cards

The Public Safety Department maintains a photographic database of all employees, faculty and students. Identification cards are to be worn at all times while on medical center property. For those who require access to restricted areas, a combined Photo

Identification / Access Control card is issued. The Public Safety Department issues Identification / Access Control cards in room 102 at 710 Albany Street. Enter the Parking and TransComm lobby and the ID Office is the first door on the left. You may obtain a badge Monday through Friday, 7:00 AM to 3:00 PM. The office will be closed for morning break from 9:00am-9:15am and lunch break is from 12:00pm-12:30pm. For more information, you may call (617) 638-6879.

There is a \$35.00 replacement charge for lost photo IDs/access cards. Please go to the cashier's office at 88 East Newton St. 2nd floor to make payment before reporting to the ID office for replacement ID.



The Control Center

The Control Center is responsible for monitoring all building automation systems and dispatching staff to respond to requests for assistance including fire alarms, heating / air conditioning systems issues, and all other building and grounds issues at the medical center.

A Control Center Technician is on duty 24 hours a day, 7 days a week and is responsible for ensuring that there are no interruptions in building services or utilities that will impact the operations of the medical center. The phone number is 638-4144. Employees and students should immediately report all facility-related deficiencies to the technician on duty. Fire, smoke, chemical or radioactive spills should be immediately reported to the Control Center's emergency response number: 617-638-6666.