

GRADUATE STUDENT HANDBOOK

Revised: Fall 2002
Department of Biology
Georgetown University

WELCOME TO THE DEPARTMENT

Welcome to the Graduate Program in the Department of Biology. Biology is an exciting, challenging and rapidly changing science. To be competitive today, research scientists need both a solid understanding of basic biological principles and specialized training in a specific area of study. The Department of Biology believes that all students graduating from its program must have a broad-based background in biology. Accordingly, all of our graduate students are required to obtain an understanding of basic biological concepts by taking three courses: Graduate Foundations in Evolution, Ecology & Behavior, Graduate Foundations in Biochemistry, Cell, & Molecular Biology, and Biostatistics. Advanced study and state-of-the-art research experience in a specialized field of biology are also imperative. The Department of Biology, therefore, admits only a limited number of graduate students into its program to insure a low student-to-faculty ratio. Course work and members of dissertation research committees may be selected, not only from within the department, but also, from Georgetown University's Medical Center or other appropriate research institutions. Today, there are a diverse number of career options open to biology graduates with Masters of Science (M.S.) and Doctorate of Philosophy (Ph.D.) degrees. Accordingly, each student decides upon a set of formal courses with the aid of an Academic Advising Committee and the dissertation committee. Most students will ultimately choose careers in academics, government, or private industry after graduation. Whatever the career path, the ability to communicate both ideas and research results is key to success. There is no better way to learn these basic skills than through teaching. Thus, all graduate students in the Department of Biology receive faculty-assisted education in the development of teaching skill, participate in at least 4 semesters of teaching biological concepts to others and enroll in Teaching Biology: Pedagogy and Practice, a seminar course about teaching.

Both the Department of Biology and the Graduate School have a number of requirements that must be met before you can successfully complete your degree. The purpose of this Graduate Student Handbook is to familiarize you with information pertaining to the Department. Requirements specified by the Graduate School are updated frequently online at <http://www.georgetown.edu/grad>. Unfortunately, no document can be 100% complete, entirely accurate, or always up-to-date. Thus, if you are uncertain about a requirement, you should talk to your academic advisor, one of the chairs of the CGSS, or the Chair of the Department of Biology.

The faculty welcomes you to our Department and hopes that your endeavors here will be highly productive and rewarding.

The Biology Faculty

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PLEASE NOTE: The Graduate School of Arts and Sciences web pages (<http://www.georgetown.edu/grad/current/cstudents.html>) contain information related to many of the topics in this handbook. In some cases the web pages will have information that is more current. Please see in particular the summary of requirements for graduate degrees (http://www.georgetown.edu/grad/current/regulations/reg_4.htm).

A. THE ACADEMIC CALENDAR

See academic calendar link at <http://www.georgetown.edu/registrar>.

B. FINANCIAL AID

The Department of Biology endeavors to provide full financial support for graduate students in the Ph.D. program. Stipends for 2002-03 are \$20,000 and for 2003-04 are \$21,500. Students are expected to take an active role in this process by applying for external grant support and by submitting Federal Financial Aid forms when possible. All US citizens are expected to apply for financial aid by completing the FAFSA annually. The best time is to do it when you fill out your tax returns since the information is identical. Applying is free and parental financial information is not included. Instructions and forms are available online at <http://www.georgetown.edu/students/student-aid/grmenu.htm>.

The Graduate College provides four semesters of support for each graduate student in Biology. Biology graduate students may also be supported by departmental funds, special fellowships and research grants. University Fellowships are awarded to qualified students on a competitive basis at the time of admission. Other special fellowship opportunities are also made available to students through nomination by CGSS.

Students should discuss with their advisors opportunities for external fellowship support. The National Science Foundation Predoctoral Award and Howard Hughes Medical Institute Predoctoral Awards are among those that provide support for graduate students. Receipt of these awards is highly prestigious and brings a student compensation beyond the value of any monetary reward.

Graduate student fellowships may be considered taxable income by the IRS, regardless of whether or not Georgetown University withholds taxes from your checks. You are encouraged to consult a tax attorney or accountant for advice about paying all taxes, including estimated taxes. Further information on taxes is available at <http://www.georgetown.edu/grad/forms/taxforms.html>.

C. REGISTRATION

Overview of the Registration Process

See http://www.georgetown.edu/grad/current/regulations/reg_1.htm

1. Obtain a net id (your email user name and password). See Biology Office (Reiss 406).
2. Meet with your Advising Committee.
3. Register via the web in “Student Access+” (<http://limited.georgetown.edu/studentaccess>).
4. Give a copy of your course schedule to the graduate administrative assistant (Reiss 406).
5. Complete I-9, W-4, and local tax forms. See the graduate administrative assistant (Reiss 406).

Obtaining Registration Material During registration, the Biology Office has all the materials you should need for registration, including your net id and the Schedule of Courses. If the Biology Office does not have a net id for you, go to the Graduate School Office (302 ICC) to be cleared for registration.

Academic Advising

Biologists need a solid understanding of basic biological principles as well as specialized training in a specific sub-discipline of biology. Accordingly, a core series of three (3) courses designed to help provide a broad-based, multi-disciplinary foundation is required of all graduate students. These courses include Biology 501 - Graduate Foundations in Evolution, Ecology and Behavior, Biology 502 - Graduate Foundations in Biochemistry, Cell and Molecular Biology, and a course in biostatistics (Biology 503 or equivalent). The number of courses required in the area of specialization varies with each sub-discipline and, therefore, is determined on an individual basis.

New Graduate Students: Prior to the beginning of the fall semester, new graduate students will meet with an Academic Advising Committee. Members of the committee will discuss your interests and career plans, review your transcript(s), and then identify a set of courses for you to take. At the end of this meeting, you should have an “academic plan” for year #1. By the end of your first year, you will have selected a research mentor and research committee. The committee then serves as your academic advisor.

The DEFL Test for Non-native Speakers of English

The Department of Biology requires incoming graduate students who are non-native speakers of English to take the writing test administered by the Division of English as a Foreign Language (DEFL). The exam is given in late August. Results of the test are taken into consideration by the Advising Committee. The dates, times and location of the examination will be posted on the Graduate Student Bulletin board and outside the Biology Office.

Full-time Student Status

Full-time students must take a minimum of 9 credit hours/semester. During the first year, if you do not register for 9 course credits, you should register for additional credits of Non-thesis research, Biology 905 (Fall) or 906 (Spring), in order to register for 9 credits. In the second year, if you are taking fewer than 9 course credits (but more than 0) you should register for Thesis Credit Research (Biology 955) in order to register for a total of 9 credits. Following completion of course work, you should register for Biology 999, Non-credit Thesis Research. 999-01 is for thesis research performed on campus and 999-02 is for research done away from campus. Part-time students should register for 6-8 credit hours to maintain part-time status. See the Graduate School Catalog for description of half-time and quarter-time status.

Course Selection

Graduate Courses at Georgetown You may take graduate level courses (Courses numbered above 350) offered by the Department of Biology. Courses in other University departments numbered above 350 may also be taken with the consultation and approval of the Advising Committee. Graduate fellowships do not pay for non-science courses.

Survival Skills and Ethics For Emerging Scientists: IDST 503 This 2-credit interdisciplinary course is offered in the spring semester and graduate students are encouraged to take it sometime during their academic career. It is a very practical course including topics such as i) publishing research findings: writing a scientific paper, ii) oral communication: presentation of seminars and poster presentations, iii) grant writing skills: writing and reviewing grants and fellowships and iv) teaching. In addition, various topics in career development are considered.

Undergraduate Courses In some cases, you may take an undergraduate course for graduate credit; however, this option should be considered carefully with the Advising Committee. You may take up to eight (8) undergraduate course credits for graduate credit, however, you must obtain approval from the instructor and the Dean of the Graduate School prior to taking the course. To take an undergraduate course for graduate credit, you must fill out the *request-for-approval form*, which you obtain from the Biology Office. Find out from the instructor what and how much extra work will be required of you in order to receive graduate credit for the course. For example, many instructors require a term paper in order to give graduate credit for an undergraduate course. Approval CANNOT be obtained retroactively.

Graduate students cannot register for undergraduate courses during the regular registration period. Instead, you must acquire an add-drop form, fill it out, obtain the instructor's signature, and take it to the Graduate School Office during add-drop week. You cannot register for undergraduate Biology Tutorial.

Courses outside of Georgetown University You may take a courses taught at consortium universities, federal agencies (*i.e.*, the FDA, NIH, and USDA), and field stations. Consult with the Advising Committee before doing so. Also, read the specific information below on M.S./Ph.D. program requirements and restrictions for the number of number of credits allowed.

Research Credit Options You may register for 1) **Credit Non-thesis Research-** BIOL 905 in the fall semester or BIOL 906 in the spring semester for 1 to 9 credits, 2) **Credit Thesis Research** BIOL 955 (1-9 credits); or 3) **Non-credit Thesis Research** BIOL 999 (0 credits). Register for Biology 905 and 906 to maintain full-time status in the first year. Register for 955 or 999 in the second and later years. Register for 955 if taking other courses for credit and register for 999-01 after completion of course work. For research done away from Georgetown, there is a special section of 999 (-02) which provides an even lower tuition rate.

Audit or Pass/Fail Options Some courses are offered on a pass/fail basis only. You may register for these courses directly. If you wish to take a regular credit course by audit or on a

pass/fail basis, you must, 1) obtain your adviser's permission, 2) inform CGSS you are taking the course for audit or pass/fail, as this could influence your tuition, and 3) complete the registration process. You cannot register for audit or pass-fail courses during registration. During registration, sign up for the course for credit. Then, obtain an add-drop form, fill it out, and hand it in to the Graduate School registrar.

Additional Graduate School Registration Requirements

The Graduate School has a number of registration requirements that must be met before registration can be completed. These include, but are not limited to, proof of immunization against select childhood diseases, IRS forms for foreign students (F-1 and J-1), and submission of an "I-am-here/payment" card. All graduate students are required to have medical insurance throughout the academic year. Thus, PLEASE read the Graduate School's online catalog at <http://www.georgetown.edu/grad/current/cstudents.html> before starting the registration process. Graduate students are responsible for keeping abreast of Graduate School regulations and deadlines.

Pre-registration

At the end of an academic semester, continuing students pre-register for the next semester. Students are encouraged to plan their courses for an entire school year at the beginning of the fall semester. Discuss pertinent academic matters with their advisor, committee and members of CGSS before registration. The steps for preregistration are essentially the same as outlined above.

D. INFORMATION RELEVANT FOR FIRST YEAR STUDENTS

Departmental Seminars

Each semester, the Seminar Committee invites scientists who are addressing contemporary biological questions to give a seminar on their research. The seminars are informative and cover a variety of topics. All faculty members and graduate students are expected to attend these seminars, held on Friday afternoons from 3:15 to 4:30. Graduate students are encouraged to suggest names of speakers to be invited.

In addition to departmental seminars, there are a wide variety of seminars on campus that are of interest to members of the Department. Check the Dean's calendar link at <http://gumc.georgetown.edu/> for medical center seminars.

"Brown-Bag" Work-in-Progress Seminars

After their first year, graduate students present their research annually to members of the Department. All graduate students are expected to attend the work-in-progress seminars. Brown-bag seminars are held on Thursdays, from 12:15 to 1:05.

Research Group Meetings and Journal Clubs

The Department of Biology believes all new graduate students should be exposed to the "joys and frustrations" of empirical research early in their careers. Thus, each new graduate student is required to attend a group laboratory meeting (weekly meeting of faculty and students working in a specific

research laboratory) in addition to one of the journal clubs. You may ask the Advising Committee, other graduate students, or the Chairs of CGSS for additional information as these activities may not be formally announced. Also, check the Graduate Student Bulletin Board frequently for updated information.

Desks, Access to Telephone, Computer and Other Support Services

Upon arrival, each graduate student will be assigned a desk within one of the research laboratories. By having space within a laboratory, new graduate students have an opportunity to interact daily with other graduate students, research technicians, and staff. Graduate students will have access to a telephone, a secured place to leave valuables, a computer and printer, etc., and have a quiet place to hold office hours with students. Once a graduate student selects a research mentor, he/she will transfer to that mentor's laboratory.

Mail Box Each graduate student has a mailbox in the Biology Office. Check it often for outside, Georgetown University and departmental mail.

Graduate Student e-mail/Bulletin Board Information that is important for graduate students is either sent via group e-mail or posted on the graduate student bulletin board which is located outside the lunch room. Please inform the graduate administrative assistant if you discover your name is not on the e-mail list.

Access to Reiss Science on Weekends and After Hours In order to obtain access to Reiss Science building after hours, ask the Office Manager to submit your name to the Security Office, so that you can use your ID in the card readers at the entrances on the first and second floors.

The "Lunch" Room Room 436 in Reiss is a place where faculty, staff, and graduate students can relax, chat, and eat. It contains a table, refrigerator and a microwave oven. Food can be stored in the refrigerator, but it is a good idea to put your name on your food to make sure no one else eats it. Do not put food in refrigerators/freezers in research or teaching laboratories!

Telephone Calls Telephones should be used for making business and emergency calls. Personal calls should be kept to a minimum. If it is necessary to make a personal **long-distance** phone calls, please inform the Office Accountant who will provide you with the bill at the end of the month.

Photocopying in the Biology Office The photocopy machines in Room 406 are available to graduate student for copying material related to your research and graduate studies. However, if you photocopy material for personal use, please pay the Office Accountant \$0.05 per page.

Security Although not common, theft annually occurs in Reiss Science. You should be especially careful to protect your own property (backpacks, computers, books, tape recorders, etc.), the equipment and supplies in the laboratories, and supplies and information in departmental offices. Keep your valuables in a safe place, and lock doors and desks when no one is around. Emergencies and thefts should be reported immediately to Campus Security (687-4343) and the departmental office (687-6247).

Faculty-Graduate Student Social Functions

Various informal receptions are held throughout the year to allow faculty, staff, and graduate students to interact in a relaxed setting and to develop departmental rapport. These socials usually

include a reception at the beginning of the school year to welcome new students, a Holiday party, and a refreshment period prior to departmental seminars.

Safety Training for Scientists

Since graduate students will be involved in research in departmental labs and/or in teaching labs, they must receive basic training in general lab safety. Basic chemical and biological safety training sessions are offered monthly by the Environmental Health & Safety office in the Medical Center. You may contact Susan Martin (martinsf@georgetown.edu) to determine class times and to register for a class that fits in your schedule. **We strongly recommend that you complete the training class in August of your first year. You must complete one of these training classes by the end of your first semester. To satisfy this requirement you must provide a copy of the class completion certificate to the graduate administrative assistant.**

The United States government has a number of regulations regarding the conduct of research. Georgetown University must comply with all of the regulations in order to receive grant support. Thus, it is imperative that all graduate students are aware of, and comply with, the regulations. Some of the required training is listed below. Graduate students should discuss these regulations with their research mentor before beginning research in the laboratory. In addition, teaching assistants for certain courses may also require specialized training.

Use of Laboratory Animals Before you may use laboratory animals in either teaching or research, several requirements must be addressed. First, **all** work (even just observation of behavior) involving vertebrates (fish, frogs, rats, etc.) requires the submission of an animal use protocol to the Georgetown University Animal Care and Use Committee (GUACUC) and its approval by that committee. Such approval is a prerequisite for the purchase of animals. Ordinarily, the protocol will be submitted by the faculty member in charge of the course or of the research, and it must be signed by the faculty member and by the Chair of the Department. Second, your name must appear on the protocol as one of the persons responsible for doing the work. Third, the GUACUC will require that you complete a training course on the use of laboratory animals, given by the veterinarians at the Research Resources Facility (RRF) as a condition of approval of the protocol.

It is EXTREMELY IMPORTANT that you adhere to these requirements. An accreditation committee visits Georgetown periodically, and the USDA makes unannounced inspections of our facilities and labs twice each year, and both will ask to see records of animal use. Violations can jeopardize Georgetown's accreditation for animal use. Please consult the big red vinyl-covered "Manual for the Care and Use of Laboratory Animals at Georgetown University," which is kept on the Office Manager's desk in the departmental office, or see Dr. Eagles, Reiss 424, if you have any questions.

Safety in Laboratories: The Chemical Hygiene Plan, Disposal of Hazardous Substances, and MSDSs You should be aware of any hazardous materials (radioactive, toxic, etc.) in laboratories where you work and know the proper way to handle any hazardous materials you use in your research. All laboratories should have a printed **Chemical Hygiene Plan** and a binder containing **Material Safety Data Sheets (MSDS)**. Learn where these are kept within the research laboratory and become familiar with their contents. After consulting the appropriate manuals, make sure you ask the professor in charge for additional instructions if you have questions. Never store food, eat or drink in a laboratory.

The Office of Radiation Safety All students who have desks in laboratories where radioactive material is used must become familiar with the nature of isotopes being used and sign the laboratory "non-user" form. All students who work with radioactive material MUST receive training by the authorized user prior to conducting experiments and take the Radiation Training Course as soon as possible. The course is NOT optional, it is required by federal law.

The Office of Biosafety, Human Blood-Borne Substances A few laboratories work with human pathogens. If you are conducting research in these laboratories or TF for courses using human pathogens, you must take a special training course provided by the Medical School. This course must be taken annually.

E. THE TEACHING EXPERIENCE AND TEACHING FELLOWSHIPS (TF'S)

As noted in the introduction, the Department of Biology not only seeks to provide you with a solid education in research, but also training in how to become a good teacher. Some graduates will enter academics, whereas others will find careers in government, private industry, public policy, or elsewhere. Whatever career path, the ability to communicate both ideas and research results is key to success. There is no better way to practice these skills than through teaching.

The Teaching Workshop (BIOL 504)

For graduate students who have not taught previously, working with students, leading a discussion group, or teaching a laboratory for this first time may be viewed as a rather daunting experience. No matter how much experience you have had with teaching, there is always more to be learned. In order to help you get started or to help hone your skills, a course has been developed to explore different aspects of teaching and learning. This course is taught in conjunction with the Center for New Designs in Learning and Scholarship (CNDLS, pronounced "candles"). This course (Biol 504) is required of all graduate students in Biology.

Teaching Fellowships

Teaching fellowships (TF's) are an important part of your graduate training. All students are given four TF assignments as an opportunity to teach in different environments and to hone their skills. Usually, an assignment consists of responsibility for leading a major course activity (*i.e.*, leading a discussion group, teaching a laboratory section, etc.), attending all lectures, holding office hours for a limited number of students and grading exams/papers. Each teaching assignment is expected to take approximately 10-12 hours per week. An attempt is made to see that all TF's have an equivalent teaching load across their graduate careers. Thus, while some semesters may have a more demanding teaching load than others, CGSS attempts to balance these inequities over the four required assignments. Students should inform the course instructor or Department Chair if their teaching assignment requires more than 15 hours/week on average. Time spent on intellectual preparation for the course is not included in these 15 hours.

TF Evaluations

Both the faculty and graduate students have expressed an interest in having a formalized mechanism for student evaluation of their performance. To this end, the department employs a uniform TF evaluation form that is distributed to students at the end of a course along with faculty evaluation forms. This evaluation is intended to be helpful and provide students with a mechanism to offer constructive comments to TFs'.

The current TF evaluation form was developed by graduate students and faculty on the CGSS. Like any standardized form, it is not ideal for all courses but rather attempts to cover a broad range of general questions. CGSS would welcome any comments from graduate students on possible changes to the TF form to make it more useful and appropriate.

Completed TF evaluations will be held by the professor until final grades are submitted (in the same way faculty evaluations are held by the registrar until grades are submitted). The evaluations should be discussed with the professor responsible for the course and should become part of your academic file (meaning that graduate students should provide the graduate administrative assistant with copies of the evaluations for addition to your academic file). TF evaluations can be used by faculty when writing recommendation letters and as part of your application package for a position when you are nearing graduation (or after).

In addition, professors for whom you work will submit a performance rating to CGSS. The rating categories are: outstanding (performance well above faculty expectations), satisfactory (performance at the usual level of faculty expectations), marginal (performance almost at satisfactory level), and unsatisfactory (performance obviously below satisfactory). A single rating of unsatisfactory, or two of marginal, will be cause for concern. Your graduate degree is awarded for the combination of research, course work, and teaching. A student who fails in any of these areas does not merit a graduate degree. Consistently poor TF ratings due to lack of effort or preparation will cause the faculty to review your privilege to continue towards earning a degree, and your privilege to continue in the Ph.D. program.

F. AN EXAMPLE SCHEDULE FOR THE PH.D. DEGREE.

The table below provides as an EXAMPLE for completion of the Ph.D. degree. There are, however, many ways to reach the goal. The table indicates "benchmarks" students need to meet in order to complete the degree in the specified time.

	Fall	Spring	End of Academic year/ Summer
Year 1	<ul style="list-style-type: none"> - Biol 501, Biol 905, 1-2 additional courses* - Attend brown bag lunch seminars - Attend departmental seminars - Attend one research laboratory meeting and one journal club 	<ul style="list-style-type: none"> - Biol 502, Biol 504, Biol 906, 1-2 additional courses* - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club - Select a mentor or rotation 	<ul style="list-style-type: none"> - Qualifying exam - Research - Select mentor - Establish initial committee - First committee meeting
Year 2	<ul style="list-style-type: none"> - Additional courses*, Biol 955 or 999 - Present work in progress seminar¹ - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club - Submit Thesis Proposal Form 	<ul style="list-style-type: none"> - Biol 955 or 999, complete courses - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club - Comprehensive exam, if ready - Committee meeting 	<ul style="list-style-type: none"> - Research
Year 3	<ul style="list-style-type: none"> - Biol 999 (zero credits) - Present work in progress seminar¹ - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club 	<ul style="list-style-type: none"> - Biol 999 (zero credits) - Departmental seminar - Lab meeting and journal club - Comprehensive exam - Committee meeting 	<ul style="list-style-type: none"> - Research - Comprehensive exam MUST be completed by end of 3rd year
Years 4-6	<ul style="list-style-type: none"> - Biol 999 (zero credits) - Present work in progress seminar¹ - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club 	<ul style="list-style-type: none"> - Biol 999 (zero credits) - Attend brown bag lunch seminars - Attend departmental seminars - Lab meeting and journal club - Committee meeting 	
	Departmental seminar on the dissertation; defense of dissertation; publication of results		
* Including Biol. 503 (Introduction to Biostatistics), or comparable course. ¹ Present work in progress seminar each year either during spring or fall.			

G. GENERAL PROCEDURES OF OBTAINING A DOCTORATE OF PHILOSOPHY

Summary of Requirements

For candidates with Bachelor's or Master's degree, satisfactory completion of:

1. A minimum of 3 years in residence (7 years maximum).
2. A minimum of 16 graduate course credits exclusive of research credit (e.g., Biol 905 or 955)
3. Completion of Biol 501, 502, 503 and 504 (all count toward 16-credit requirement)
4. Teaching experience as a TF for at least four (4) semesters
5. Passing grade on Qualifying Examination (end of the first year)
6. Ph.D. Comprehensive Examination (no later than end of third year)
7. Ph.D. Thesis with defense
8. Departmental Dissertation Seminar
9. Preparation of at least one manuscript for publication

Minimum Time Requirements

The minimum time requirement for obtaining a Ph.D. is 6 regular semesters in residence. All part-time students must spend at least one academic year in residence in the Department as a full-time student.

Credit and Course Requirements

Ph.D. students may take no more than 8 credits with numbers below 350 for graduate credit, but the proper paperwork must be completed to obtain graduate credit (see Registration Section). Since only 16 course credits are required for the Ph.D., use of undergraduate courses for graduate credit should be kept to a minimum.

Ph.D. candidates are permitted to register for Biology Research (BIOL 905 and 906) in their first year for up to 10 credits total. Biology Research has two main purposes. First, it allows students to do short-term research projects in different labs to gain different types of experimental skills. Second, it allows students to have an opportunity to explore research projects (and day-to-day life in different laboratories) prior to making a commitment to a thesis project.

Incoming students may participate in Biology Research with different research laboratories, preferably during the first two semesters of enrollment. A thesis lab should be chosen not later than the third semester.

A second year doctoral student who is registered for some graduate courses and is pursuing thesis research should register for up to 12 credits of Credit Thesis Research (BIOL 955). Your completion of the 16 required credits does not imply that you have successfully completed all Ph.D. requirements. You are still required to register for Non-credit Thesis Research (BIOL 999) at a reduced tuition rate. Your committee determines when you have satisfactorily completed your thesis research.

Teaching Requirements

Each Ph.D. student is expected to attend teaching workshops and serve as a TF for at least four (4) academic semesters.

Qualifying Examination

This examination is given in accordance with Graduate School policy (see the Graduate School catalogue information). The purpose of this examination is for you to demonstrate to the faculty that you have the broad knowledge that justifies a graduate degree in the field of biology rather than a specific area within biology. This is achieved by successfully passing a written and oral examination that is ordinarily taken at the end of your first academic year in residence. A request for postponement must be submitted in writing to the CGSS prior to 15 April. Postponement will be allowed only for compelling reasons. Exams must be passed within two years of entry into the program or the student will be dismissed. This examination is taken by **all** Ph.D. candidates, including those entering the Department with advanced degrees.

Details regarding the dates and times of the qualifying examination will be given to each graduate student as soon as they are available. Dates are usually decided by the end of the Fall semester. Subject matter for the examination reflects concepts highlighted in the required courses Biol 501 and 502. Thus, there will be one section of the examination covering evolution, ecology and behavior (EEB) and a second section covering molecular biology, cell biology, & biochemistry (MCB). Each section will consist of both written and oral components and the specific topics covered will be determined by the faculty of the Department. No fewer than three faculty members per section will be responsible for writing and scoring the examination.

There are several possible results of this (the qualifying) examination. Students can pass with distinction, pass, pass with remediation, or fail. Note that a student is graded independently on the two sections of the exam (EEB and MCB). Thus, a student could pass one section while failing the other. Pass with remediation indicates a perceived deficiency that the faculty believe can be remedied with a specific action, e.g. completion of a specific course. This action will be specified by the faculty. Failure indicates a more serious deficiency and students who fail must retake and pass the appropriate section(s) of the qualifying examination the next time it is offered in order to remain in the Ph.D. program. If a student fails both sections of the examination, the retake will usually occur no later than the beginning of the next Fall semester. If a student fails only one section, the retake will usually occur no later than the end of the following Spring semester. Students will remain on fellowship until the retake. A second failure on the examination will result in dismissal from the Ph.D. program. Students who fail the Ph.D. qualifying examination, but, in the opinion of the faculty, perform sufficiently to have passed the M.S. comprehensive examination will be allowed to attempt a terminal M.S. degree. Fellowship support will not be provided towards completion of a terminal M.S. degree.

Ph.D. Thesis Committee and Research

By the end of your first year, you should select a research area and a research mentor, who will help you select the other members of your committee. Your committee must have at least four (4) faculty members **at the time of your thesis defense**, including at least two (2) members from the Department and at least one (1) member from outside the Department. As soon as you establish your committee or if you change any part of it, please notify the CGSS. The composition of the PhD committee is subject to approval by CGSS and the Departmental Chair. Your initial committee must be established no later than the end of your first year in the department (including the summer term). The composition of a thesis committee is fluid, especially in your first few years, and can be changed as your research develops.

Your committee is responsible for your academic program, training, and research, as well as conducting your Ph.D. comprehensive examination and thesis defense.

Your committee **MUST** meet at least once each year to evaluate your overall progress towards your degree. All members should be present. At least three members of the thesis committee must be present to constitute a committee meeting. An affirmative vote by a majority of the committee is required to designate a dissertation as acceptable for defense and the defense as passing. Immediately after the meeting, minutes from the meeting should be provided by the mentor to the student and a copy placed in the student's record in the Biology Office. The minutes should include: date, names of committee members present, and a list of the important decisions and recommendations made. Please provide this information to the graduate administrative assistant so that it can be included in your file.

Students are required to conduct at least 50% of their thesis research in the Department, which may include time spent doing field work under the direction of a faculty member in the Department. Collaborative research or training experience may be arranged with scientists outside of the Department (including off-campus), subject to approval by your dissertation committee and the Department Chair.

Research accomplished by a student as a paid employee (either on or off campus) **may not** be used for a thesis.

Ph.D. Comprehensive Examination

The Ph.D. comprehensive examination is taken after the successful completion of the Qualifying Exam and is intended to assess the analytic and synthetic abilities of a student in areas of biology pertinent to his or her goals as a scientist. The examination may take different forms, such as the writing of a detailed research grant or thesis proposal, or a combination of written and oral examinations, as deemed appropriate by the student's dissertation committee.

For maximum benefit to the student, the CGSS strongly recommends that this examination be taken within a year of completion of course work. The Comprehensive Exam, however, **MUST** be taken by the end of the third year. If a graduate student does not pass the exam or obtain a waiver from CGSS by the beginning of the fourth academic year, the student will not be eligible for a fellowship.

Ph.D. Thesis Proposal

You must submit a thesis proposal form to the graduate school at least one week before the defense of thesis. However, you are encouraged to submit this form during the first semester of thesis research. The form is available online: <http://www.georgetown.edu/grad/forms/current-forms.html>.

Publication of Thesis Results

You are required to prepare at least one scientific paper based on your thesis for submission to a scientific journal. Learning to prepare a manuscript is an important part of the educational process. Clearly, it is also highly beneficial for a new Ph.D. to have had one or more papers published, or in press, in refereed journals before completing graduation.

Preparation of the Ph.D. Dissertation

Obtain Format Requirements from the Graduate School

Your thesis **MUST** be in accordance with the directions in *Guidelines for Dissertation and Thesis Writers*. This document is available at <http://www.georgetown.edu/grad/forms/current-forms.html>. One of the Associate Deans in the Graduate School will examine your dissertation (usually page by page) to verify that it conforms with the rules; therefore, it is extremely important that you follow the directions provided by the Graduate School carefully. It provides a checklist for submitting your thesis.

Writing Your Dissertation Writing the Ph.D. dissertation can be a very time-consuming process. Thus, before beginning to write your dissertation you would be wise to i) to plan with your committee how to present your data and that sufficient data have been obtained, ii) discuss the format and contents with your mentor, iii) review the format regulations of the Graduate School, and iv) consult an excellent manual of scientific writing. You should allow ample time for writing your thesis, as it will take longer than you expect to write your thesis in good scientific style. It is important to get as much feedback as possible from your adviser as you are writing.

File an Application for Graduate Degree

Master's and doctoral degrees are awarded at the end of each month (except June). To be awarded a degree, you must file an Application for Graduate Degree by the first business day of the month you intend to defend. (May is an exception and other deadlines apply.) The application form is available at <http://www.georgetown.edu/grad/forms/current-forms.html>.

Announcement of the Departmental Seminar and Defense of Thesis

The Ph.D. degree is awarded by the Graduate School and it **MUST** be notified. Since the degree is certified by the Department of Biology, it is important that all members of the Department are also aware of your accomplishments. A Ph.D. dissertation **CANNOT** be defended unless it has been properly announced. The graduate administrative assistant will assist in this process, if provided with advance notice.

Department Notification

At least 7 days prior to defense of dissertation, ***the student and the mentor are responsible*** for announcing the Departmental Seminar and the Defense of Thesis. The following four (4) items are placed in the Biology Office mailbox reserved for dissertations:

- a. An announcement of the Defense including Date, Time, and Location. This item should also be placed in all faculty mailboxes and on Department bulletin boards.
- b. Abstract of the Thesis.
- c. Curriculum Vitae.
- d. A complete copy of your thesis.

University Notification

At least 7 days prior to defense the defense must be announced to the Graduate School by filling out:

- a. the online form at (<http://www.georgetown.edu/grad/dissertation/>).
- b. the Thesis Reviewer's form (<http://www.georgetown.edu/grad/forms/current-forms.html>). All members of your thesis committee must sign this form indicating your thesis is ready for defense. This does not guarantee that the thesis is acceptable in final form.

Submitting the Final Dissertation

After the defense, revise your thesis. It must then be approved by the following:

- 1) your committee,
- 2) your advisor, and
- 3) the **Department Chair**

It is strongly recommended that you allow, at the very least, two weeks after your defense to make revisions and corrections as recommended by your committee, and to obtain final signatures approving your dissertation.

After the appropriate forms are signed, call the Graduate School for an appointment. They will examine the dissertation to make sure you have followed all of the directions. It is possible that you may need to make some changes. Once the dissertation is completed, hand-carry your dissertation and cover sheet to the Graduate School and obtain a receipt. Do not sent the dissertation to the Graduate School by regular mail.

H. AN EXAMPLE SCHEDULE FOR THE M.S. DEGREE.

The table below provides as an EXAMPLE for completion of the M.S. degree. There are, however, many ways to reach the goal. The table indicates "benchmarks" student need to meet in order to complete the degree in the specified time.

	Fall	Spring	End of Academic year/ Summer
Year 1	<ul style="list-style-type: none"> - Biol 501, Biol. 905, plus one additional course* - Attend "brown bag lunch" seminars - Attend departmental seminars - Attend one research laboratory meeting and weekly journal club 	<ul style="list-style-type: none"> - Biol. 502, Biol. 906, plus 1-2 additional courses* - Attend "brown bag lunch" seminars - Attend departmental seminars - Attend one research laboratory meeting and weekly journal club - Selection of mentor 	<ul style="list-style-type: none"> - Comprehensive exam - Research - Formation of committee - Committee approval of thesis proposal
Year 2	<ul style="list-style-type: none"> - Course work as needed* - Thesis research 955 or 999 - Present work-in-progress seminar - Attend departmental seminars - Attend one research laboratory meeting and weekly journal club - Committee meeting #2 to evaluate progress. - Submit thesis proposal to Graduate School 	<ul style="list-style-type: none"> - Complete course credits* - Thesis research 955 or 999 - Attend departmental seminars - Attend one research laboratory meeting and weekly journal club 	<ul style="list-style-type: none"> - Research - Thesis writing - Present thesis seminar - Thesis defense
	Final Committee meeting; defense of dissertation; Department seminar for presentation of the thesis		
	* Including Biol. 503 – Introduction to Biostatistics and Biol 504 (Teaching Biology) taken in either year 1 or year 2.		

I. GENERAL PROCEDURES FOR OBTAINING A MASTERS OF SCIENCE DEGREE

Summary of Requirements Satisfactory completion of:

1. a minimum of 24 graduate course credits (excluding research credits: 905, 906, 955 & 999)
2. a minimum of 2 semesters and 1 summer in residence
3. 6 credits of thesis research (BIOL 955)
4. 1 TF assignment per semester while a full-time student
5. M.S. Comprehensive Examination
6. M.S. thesis with defense
7. Departmental seminar on your thesis.

Minimum Time Requirement The minimum time requirement for obtaining an M.S. is two regular semesters plus one summer session.

Credit Requirements

A total of 24 course credits and 6 credits of Credit Thesis Research (BIOL 955) is required. At least 16 of these credits, exclusive of BIOL 955 credits, should be obtained in the Department. No more than 8 credits with numbers below 350 may be taken for graduate credit, but the proper forms must be filled out to obtain graduate credit (see Registration section). No more than 4 credits for Biology Research (BIOL 905 and 906), out of the 24 course credits, may be counted toward your M.S. degree. A full-time graduate student is expected to take at least 9 credits of course work each semester during the first year of residence. These are minimum requirements. Additional ones may be established at the discretion of your committee or the CGSS.

M.S. Comprehensive Examination

The M.S. comprehensive is given in accordance with Graduate School policy. The purpose of this examination is for you to demonstrate to the faculty that you have the broad knowledge which justifies a graduate degree in the field of biology rather than a specific area within biology. This exam will be taken at the end of the first academic year in residence (*i.e.*, end of May or beginning of June). It will cover selected readings from the original literature. The examination consists of written and oral parts.

A student has the right to request a postponement of the exam. A letter must be submitted in writing to the CGSS prior to 15 April. Postponement will be allowed only for compelling reasons.

Thesis Committee and Research

Your M.S. thesis committee must consist of at least three (3) members, with two (2) members from the Department of Biology and one (1) member from outside of the department. By the end of your first academic year, you should choose a research area and a thesis mentor. Once this is accomplished, you and your mentor will select a committee. This committee then serves as your academic Advising Committee. As soon as you set up your committee, or if you change any part of it, please notify the CGSS. For an M.S. degree, the committee usually meets 3-4 times. For example, in meeting #1) the committee is "officially" established and the thesis proposal is discussed, #2) progress is assessed, #3) the committee decides if sufficient data have been obtained to answer the questions proposed, and #4) Defense of Thesis.

Research accomplished by a student as a paid employee (either on or off campus) **may not** be used for a thesis.

Thesis Proposal

All research M.S. candidates must have a written thesis proposal that is approved by their committees. The format of the proposal is up to the committee. Once the proposal has been approved, a copy of it **MUST BE SUBMITTED TO THE GRADUATE SCHOOL**. Please, do not forget!

Preparation of the MS Dissertation

Obtain Format Requirements from the Graduate School

Your thesis **MUST** be in accordance with the directions in *Guidelines for Dissertation and Thesis Writers*. A copy of this document is available at <http://www.georgetown.edu/grad/forms/current-forms.html>. One of the Associate Deans in the Graduate School will examine your dissertation (usually page by page) to verify that it conforms with the rules; therefore, it is extremely important that you follow the directions provided by the Graduate School carefully. They provide a checklist for submitting your thesis.

Writing Your Dissertation Writing the M.S. dissertation can be a time-consuming process. Thus, before beginning to write your dissertation you would be wise to i) to plan with your committee how to present your data and that sufficient data have been obtained, ii) discuss the format and contents with your mentor, iii) review the format regulations of the Graduate School, and iv) consult a manual of scientific writing. It is important to get as much feedback as possible from your adviser as you are writing.

File an Application for Graduate Degree

Master's and doctoral degrees are awarded at the end of each month (except June). To be awarded a degree, you must file an Application for Graduate Degree by the first business day of the month you intend to defend (May is an exception and other deadlines apply). The application form is available at <http://www.georgetown.edu/grad/forms/current-forms.html>.

Announcement of the Departmental Seminar and Defense of Thesis

The M.S. degree is awarded by the Graduate School and they **MUST** be notified. Since the degree is certified by the Department of Biology, it is important that all members of the Department are also aware of your accomplishments.

Therefore, **at least two weeks (i.e., 14 days)** prior to defense of dissertation, ***the student and the mentor are responsible*** for announcing the Departmental Seminar and the Defense of Thesis. *A M.S. dissertation CANNOT be defended unless it has been properly announced.* The graduate administrative assistant will assist in this process, if provided with advance notice.

Announcement of the Defense of Thesis - At least 14 days prior to defense the following three (3) items are placed in the Biology Office mailbox reserved for dissertations:

- a. An announcement of the Defense including Date, Time and Location.
- b. Abstract of the Thesis.
- c. Curriculum Vitae.

At least 7 days prior to defense of the thesis:

- a. the Thesis Reviewer's form (<http://www.georgetown.edu/grad/forms/current-forms.html>) must be submitted to the graduate school. All members of the thesis committee must sign this form.
- b. A complete copy of your thesis must be placed in the Biology Office mailbox reserved for dissertations.

J. ADDITIONAL IMPORTANT INFORMATION FOR M.S. AND PH.D. STUDENTS

Transferring of Graduate Credits to Georgetown University You may transfer a maximum of 25% of the total number of required credits for your degree. Only graduate courses, taken at another university, that were not used for credit toward an awarded degree, can be transferred. The credits are not automatically transferred or accepted. Thus, if you wish to have credits from another university transferred to Georgetown, you should do the following: Obtain the guidelines from the Graduate School and write a letter to the CGSS requesting approval to transfer graduate credits. In the letter, you must provide an official transcript, indicate which credits you wish to have transferred, and include a description of the courses taken at the other institution (*e.g.*, description in the course catalogue) you wish to transfer. The CGSS will consult with your research committee. If your request is approved, a letter requesting approval for the transfer of credits will be sent to the Dean of the Graduate School. You will be notified by letter of the Dean's decision.

Academic Standing You are expected to maintain at least a B (3.00) average. The Graduate School, CGSS co-chairs and Department will review your performance at the end of each semester. If your performance is poor, the CGSS may recommend to the Chair that you be dismissed. If the Chair concurs, dismissal will be recommended to the Dean. In an exceptional circumstance, the Chair may independently recommend dismissal. An "F" in two courses will ordinarily result in a dismissal recommendation. Dismissal is usually for academic reasons; however, a dismissal may be recommended to the Dean whenever it appears to be in the best interest of the student, the Department, or the University, including poor performance as a TF. You must have a 3.00 average to take the M.S. Comprehensive/Ph.D. Qualifying Exam and the Ph.D. Comprehensive Exam. It is your responsibility to verify that you have met this requirement prior to taking these exams.

Change of Status "Change of graduate-student status" means a change from M.S. status to Ph.D. or vice versa; a change from special student status to graduate student status; or dismissal from our program. A request for a change may come from you. A recommendation may come from an individual professor, your Committee, or the CGSS. The CGSS reviews all such recommendations and either approves or disapproves them. The CGSS sends a notification of its action to the Department Chair, who sends approval or disapproval to the Dean. Changes in status may relate to things such as quality of your performance in a formal course, research progress or lack thereof, teaching, or your general attitude. In each case of "change of status" action, the best interests of the student, Department, and University are carefully considered. You have the right to request to appear before the CGSS to discuss a pending action or to appeal a decision to the CGSS, Department Chair, or Dean.

Leave-of-Absence If external events threaten to interfere with normal progress in your graduate program, you may seek a leave-of-absence. You should consult with your adviser and the CGSS in

advance, since your absence may have ramifications for fellowship and TA scheduling. The procedures for application for a leave-of-absence are described in the Graduate School online catalog. Your application should be approved by your advisor and the Department Chair before it goes to the Graduate School.

Appeals If you wish to appeal any academic decision that is made about you, such as a grade in a course or on an exam, you should first discuss the situation with the professor involved. Appeals may be made first to the Department Chair and then to the Dean of the Graduate School.

Predoctoral Grants Graduate students are encouraged to seek external fellowship support. Writing proposals helps in the process of developing and articulating research ideas. Further, developing a record of successfully funding your research (the dollar amount is irrelevant) is an important part of your career progress. There are several online services that list available funding opportunities. Please consult your advisor or one of the co-chairs of the CGSS for advice in writing a grant for pre-doctoral support.

Funds for Scientific Meetings The Department of Biology has limited funds to cover travel expenses so that students can present at scientific meetings. If you wish to apply for such funds, please discuss the situation with your adviser and then write a brief memo to the CGSS requesting funds. Include the name of the meeting, the title of the presentation you will give, and an estimate of the cost. If approved, the CGSS will forward the request to the Biology Financial Officer. The graduate school also has funds for attending meetings and these must be sought prior to seeking departmental funds.

Change of Address or Telephone Please notify the Department Office and the Registrar's Office (in White-Gravenor) as soon as possible if you change your address or telephone number. The Registrar's Office mails your grades to you at the end of each semester and informs you if there had been a change in the registration schedule.

K. GRADUATE STUDENT ORGANIZATIONS

Georgetown University Graduate Student Organization (GSO) The purpose of the GSO is to promote communication among all graduate students from various departments. The GSO sponsors seminars, socials, and other special events. The graduate students in the Department elect one representative each year. See <http://media.georgetown.edu/gso/>.

Biology Committee of Graduate Students (BOGS) is the organization of graduate students within the Department. It was established to make program recommendations and to represent the views of the graduate students. BOGS is composed of one elected representative from each class year. Graduate students should address their concerns and problems to the members of BOGS.

Representatives to Faculty & Graduate Student Meetings One or two graduate students are elected as representatives to the monthly faculty and graduate student meetings.

Representatives to the CGSS One or two graduate students are elected as representatives to the CGSS meetings.

L. GRADUATE STUDENT BILL OF RIGHTS

(Originally Prepared by the Graduate Students and accepted by the Faculty, circa 1990) [Some of the information may be dated, but the spirit remains the same.]

I. Student-Mentor Interactions

A. Good communication between a mentor and a student is absolutely critical in order to perform quality science and maximize the education experience. It is the student's right to expect that the mentor be actively [intellectually] involved in each student's project. The participation of the mentor in the student's project enables the pair to anticipate and resolve problems in a timely fashion.

B. It is critical that a mentor and graduate student schedule frequent meeting times to discuss the student's progress and problems and current literature, and to provide encouragement and support. Although flexibility is essential in order to accommodate individual schedules, students have the right to expect such meetings.

C. The expectations that the mentor has of the student should be made clear from the time when the student joins the mentor's lab. It is realized that expectations may change somewhat as a research project evolves, and that these changes should be discussed. The student must ask questions concerning the parameters of any potential thesis projects, comprehensive exam formats typically followed in the mentor's lab, responsibilities as a member of that lab group, career options, etc. It is recognized that the student has the right to initiate discussions pertaining to both the mentor's and the student's expectations of each other and the project, the student's career goals, and how the student's training can prepare for these goals. The student is also responsible for conveying any concerns and changes in personal career goals to his, or her, mentor.

D. The student should exercise his, or her, right to be involved in the development of his, or her, thesis from start to finish. During the process of choosing a thesis, a student is encouraged to

discuss with his, or her, committee, or with other scientists the degree of risk associated with any thesis projects that are considered. A time limit should be established in order to provide a reasonable point at which the project can be reevaluated and when other approaches must be considered. In order to avoid delays due to project failure, it is recommended that alternative strategies, or options, be discussed early in a student's project. At a minimum, thesis progress and expectations must be reviewed annually by the committee.

II. Qualifying and Comprehensive Exams

A. A formal statement as to the purpose of the M.S. Comprehensive and Ph.D. Qualifying exams is found in the Graduate Student Handbook. The student should be aware of the format, grading or scoring system, and of the consequences of exam failure. First-year students are encouraged to talk with faculty members involved in writing and reading the exams, in order to keep up to date on all reading lists required, and other pertinent information.

B. A formal statement as to the purpose of the Ph.D. Comprehensive exam can be found in the Graduate Student Handbook. Students are encouraged to ask their mentors about the formats used in their lab and those used in other labs. The student has the right to know the format of the comprehensive exam that is given in the lab that the student has chosen to enter.

III. Student responsibilities and rights as a member of the Georgetown University Department of Biology.

A. Teaching fellowships are recognized as an essential part of our Graduate Program, and it is the responsibility of the student to devote the appropriate amount of time needed for both physical and mental preparations for each lab session. It is recognized that it will take different students different amounts of time to become prepared. In a semester in which a student is serving as a teaching fellow, that student is expected to spend approximately ten to twelve hours per week, but no more than 15 hours, excluding intellectual preparation, over the course of the semester. If a particular TF assignment requires significantly more time than this, it is the responsibility of the student to bring this to the attention of the course instructor, or, if need be, to the Director of Graduate Studies or Department Chair.

B. It is the student's right and responsibility to ask his, or her, mentor, other faculty members, or both, about the availability of outside grants or scholarships for which he or she may apply. To be awarded such a grant has recognizable financial benefits to the student, lab, and Department, as well as the provision of valuable experience in abstract and proposal writing and field exposure for the student. It is also a helpful addition to a resume.

C. It is the student's right and responsibility to attend and participate in departmental functions such as our Friday afternoon seminar series.