INTRODUCTION

This document is intended to provide a description of the Graduate Program in Ecology and Evolutionary Biology (EEB). The aim is to spell out the guiding principles of the program so that graduate students understand what is expected of them and what they can expect from the program.

1. GOALS OF THE GRADUATE PROGRAM

The general goals of the Graduate Program in Ecology and Evolutionary Biology are to train scientists in the broad area of organismal, evolutionary and ecological biology who are capable of thinking critically about the biological world and to prepare these individuals to function as independent, professional scientists. To achieve these goals the Program must ensure that our graduates combine a broad understanding of ecology and evolutionary biology with a deep knowledge of a specific research area. Moreover, the Program must ensure that this knowledge can be applied effectively to the design, execution and publication of high quality scientific research. Ultimately the quality of one’s scholarship is an important measure of success, and this depends on one’s ability to initiate and complete creative scientific research as an individual and as an effective collaborator. For that reason, the EEB Graduate Program encourages students to initiate their thesis research at the earliest possible stages, and to play an active role in achieving scientific independence in collaboration with their primary advisor and thesis committee. By fostering an environment where students are afforded a remarkable degree of both freedom and access to faculty, we hope that our graduates will attain the skills to become leaders in their discipline.

2. GUIDANCE, SUPPORT AND EVALUATION

Mentoring and guidance are the first responsibilities of a student’s primary advisor and the Advisory and Thesis Committees. The Advisory Committee is responsible for overseeing the student’s course work and research activities in the first year, while the Thesis Committee oversees the bulk of research and scholarly activities conducted by the student after the first year through the completion of her or his dissertation. More details on these two committees are given below. In general, however, the role of the
major thesis advisor and these Committees are to:

1. help develop and formalize the goals of student's graduate program;
2. identify the specific requirements that are needed for a solid foundation in the chosen area of study;
3. evaluate progress toward the stated goals;
4. evaluate a student's thesis proposal and dissertation.

It is through these Committees, the composition of which is determined by the student and primary advisor, that our program can provide individual but structured guidance. Progress is recorded through a succession of committee reports detailed below and submitted to the EEB Director of Graduate Studies and the Graduate Program Coordinator.

Advisory and Thesis Committees

Advisory Committee. Before or during the first week of the fall semester, first year students will identify and meet with the "Advisory Committee" consisting of their major professor and a minimum of two other faculty members. The incoming student and major advisor should discuss the make up of this committee before the student arrives on campus. Aside from the major advisor, it is not necessary that members of this committee have expertise in the specific research area of the incoming student, as the main objective of this committee is to lay out clear expectations of course work, teaching and research activities during the first two years.

In this meeting the student's background will be considered (courses, previous research and work experience), and any gaps will be identified. Students should prepare a CV and a list of relevant coursework, including course titles, and distribute these to the committee members by email prior to the meeting.

A course of study (individualized curriculum) will be determined at this meeting so that any gaps in preparation can be filled either through course work or teaching assistantships. A list of potentially suitable courses is available at the back of this guide as a resource for students and Advisory Committees. Courses come and go, so this list should not be viewed as definitive.

We expect that incoming EEB students will have completed the equivalent of an undergraduate course in the following topics:

- Ecology
- Evolution
- Organismal-Comparative Biology
- Cell and Molecular Biology
Brown University  
Division of Biology and Medicine  
Department of Ecology and Evolutionary Biology

- Statistics
This minimum background is necessary to understand the weekly EEB Departmental Seminars and Brown Bag Seminars. These seminars provide exposure to diverse research topics in Ecology, Organismal and Evolutionary Biology, and are the primary mechanism for ensuring breadth in EEB training. The Advisory Committee will look for this coursework background in the first AC meeting. Students will be required to take courses to fill any gaps, even if this means taking undergraduate courses that do not offer graduate credit. If the AC feels strongly that the student should not be required to fill gaps, then the AC may petition the DGS for an exemption.

Students and Advisory Committees are particularly encouraged to take advantage of the 1000-level courses in assembling the individualized curricula. These undergraduate/graduate level courses provide excellent opportunities for rigorous advanced study and offer an effective way to prepare for the qualifying exam.

It is recommended that each student identify an independent research project to conduct under the auspices of a specific faculty member. Most incoming students have a general idea for a thesis project, but it is recommended that specific time be budgeted for reading, planning or doing research that might help further clarify a thesis project. A short Advisory Committee Report of this meeting must be filed with the Director of Graduate Studies (DGS) and the EEB Graduate Program Coordinator, including the composition of the committee, the stated course work or research to be done in the first year, and a general description of the research focus.

In the spring of the first year, the Advisory Committee will meet again to review the student’s progress and make recommendations for summer research or further study. It is essential that a meaningful research experience is a significant component of this first summer. A Second Advisory Committee Report must also be filed with the DGS and the EEB Graduate Program Coordinator.

**Thesis Committee.** At the beginning of the second year, the student should convene a "Thesis Committee" meeting with the major professor and a minimum of three other faculty members. This committee can consist of the same faculty as the Advisory Committee (plus one additional faculty member), or be of quite different composition. Faculty from EEB, MBL, other Brown departments, or outside of Brown can serve on this committee, but at least three of the four members must be EEB or MBL faculty. The Thesis Committee should consist of faculty that will mirror the goal of providing both depth and breadth in ecology, evolutionary and organismal biology. Students are encouraged to include members who will provide a fresh or diverse perspective on the area of biology that will become the student’s research specialty.
Addition of an outside reader (from outside of Brown and MBL) at the time of the thesis defense is encouraged, but not required. The student and thesis committee should discuss this option in the student’s last year. An advantage of having an outside reader can be to bring the student’s dissertation work to the attention of a leader in the field.

In the First Thesis Committee Meeting, the committee should discuss the needs for any further course or preparatory work and identify specific academic weaknesses that should be addressed during the coming year. The main agenda item for the meeting should be the discussion of a thesis topic. If a satisfactory project has not been defined, specific goals should be identified that will help in the development of a project. For all students, a clear timeline for progress toward thesis goals should be defined in writing. A First Thesis Committee Meeting Report should be filed with the DGS and the EEB Graduate Program Coordinator itemizing these goals and stating the agenda for the year.

Students are required to meet with their Thesis Committees at least once per year, and ideally every 6-8 months, after the completion of their Qualifying Exam (see below).

**MBL Students.** Students in the Brown/MBL graduate Program fulfill the same requirements as described above, with the exception that they are expected to generally have joint primary mentorship by an MBL and a Brown faculty member. In practice, one person may be viewed as a primary advisor, but the other person is expected to play an equally important role in the mentoring of the student. It is implicit that the research interests of a joint Brown/MBL student will lie in an area of research overlap of the two primary advisors, so these advisors should work closely with the student to identify a common set of goals and to maintain communication. The remainder of the committee members on the Advisory and Thesis Committees may be drawn from any of the Brown and MBL faculty, as is dictated by the research interests of the student.

**Annual Evaluations**

The purpose of the annual evaluation process is for students to develop and reflect on their research and professional development goals, and to develop timelines for the coming year. Writing annual reports and being evaluated are also professional development skills in themselves. Faculty members are evaluated annually as the basis for salary raises, junior faculty are evaluated for tenure and promotions, and funded projects require annual reporting to granting agencies. The process of being evaluated is uncomfortable for many, so experience with reporting and evaluation in a supportive environment can help develop valuable skills and perspectives.

*The process proceeds according to the following schedule:*

1. Students submit draft annual reports to their advisors on or before the first Friday
in November.
2. Advisors and students have individual meetings to discuss progress and activities over the past year, and strategies for the current year, based on the draft annual report, and the annual report is finalized. These meetings should be held by the second Friday in November.
3. Annual reports are submitted to the Grad Program Coordinator on or before the second Friday in November.
4. Faculty meet in two, 2-hour blocks to discuss student progress.
5. Faculty write annual review letters and submit them to the student, the DGS(s), and the Grad Program Coordinator for the student's file. Deadline for these letters is the second Friday in December.
6. Student completes the Response Form (see format below) by the third Friday in December. The faculty letter and student response become part of the student's EEB file. The letter will typically not be modified based on the student's response; instead they both go into the file.

Format for Student Response to Annual Review Letter:
[ ] I've read the letter and have no comments, objections or clarifications.
[ ] I've read the letter and offer the following response (this response can be entirely positive, or express concerns, objections or clarifications).

[[Text field]]
Name
Date
Signature

The contents of the Annual Report depend on how far the student has advanced in the program:

Students in year 1
1. current CV, together with a 2-3 sentence blurb describing research interests for the Department website.
2. report form from the First Advisory Committee meeting

Students beyond year 1 who have not yet passed the qualifying exam
1. current CV, together with a 2-3 sentence blurb describing research interests for the Department website.
2. report forms from Advisory or Thesis Committee meetings held in the past year (or date of last committee meeting if no form was submitted)
3. a summary of research and professional development activities in the past year (1 page maximum)
4. proposed research and professional development activities for the coming year, including a timeline (1 page maximum)

Doctoral students who have advanced to candidacy (passed qualifying exam)
1. current CV, together with a 2-3 sentence blurb describing research interests for the Department website.
2. report forms from Thesis Committee meetings held in the past year (or date of last committee meeting if no form was submitted).
3. title and a short narrative for each thesis chapter including:
   a. statement of research question
   b. methods or approach
   c. progress to date
   d. what still remains to be done
      (length of narrative for each chapter should be about ½ page; abstracts from completed manuscripts or publications may be submitted instead of narrative)
4. summary of other professional development activities in the past year, such as side projects, scientific meetings, teaching, outreach, etc., and plan for coming year
5. timeline for completion of all thesis chapters and professional development goals and date of most recent thesis committee meeting (or scheduled date for the near future)

In the faculty meeting, the student’s primary advisor provides a short oral summary of the past year and identifies progress and achievements, as well as areas that need strengthening. The primary advisor makes a recommendation about any course of action that needs to be taken to ensure that the student continues to progress and maintain a status of “good standing.” Other faculty often contribute information that allows the entire faculty to have a clear picture of where each student in the program stands in their education. The faculty view this as one of the most effective things they do as a group to maintain close mentorship and a common sense of mission in training future leaders in ecology and evolution. The conclusions of these discussions are written up as a letter to the student. The student provides a written response to the letter, and the letter and response are filed with the DGS and become a part of the student’s record.

If it is deemed by the faculty that a student is not in “good standing”, the student is put on probation and a course of action is stated in writing that must be followed for the student to be reinstated in “good standing.” The consequences of meeting – or failing to meet – these action items should also be stated explicitly in the letter to the student. A
copy of this letter is provided to the Dean of Graduate and Postdoctoral Studies. Normally, the student and their committee have one semester to address the stated deficiencies; if the deficiencies are not remedied in the stated timeframe the student may be asked to leave the program.

Brown University BioMed Division Individual Development Plan (IDP) policy. In addition, first- and fourth-year graduate students are required to prepare and submit Individual Development Plans (IDP) by the end of the first semester, following the guidelines and template provided here. The contents of this document are expected to very closely mirror students’ annual reports, typically amounting to little more than a reformatting of the annual report. First- and fourth-year students should submit draft versions of their IDP to their mentor(s) together with their draft annual reports according to the schedule above. Student and mentor(s) should then finalize the IDP at the same time as they finalize the annual report. Finally, the student is required to submit the final form of their IDP to the BioMed Division Office of Graduate and Postdoctoral Studies, as well as the EEB Graduate Program Coordinator.

Financial Support
As detailed in the admission letters, PhD students are guaranteed five years of financial support. However, if any student intends to continue in academics, grant writing will be a required activity and EEB urges all students to apply for any and all graduate fellowships for which they may be eligible. The process of applying can help with the clarification of research ideas, hone writing skills, and provide training in balancing research, teaching, studying and grant writing – a critical set of survival skills.

Below are links to several Fellowships, most of which have deadlines in early November.

NSF Graduate Research Fellowship
http://www.nsfgrfp.org/

Howard Hughes Medical Institute Fellowships
http://www.hhmi.org/grants/office/graduate/

NIH NRSA Individual Predoctoral Fellowships
http://grants.nih.gov/training/nrsa.htm

Department of Energy
http://orise.orau.gov/doescholars/
Department of Defense
https://www.asee.org/ndseg/instructions.cfm

National Academies Fellowship
http://www7.nationalacademies.org/FELLOWSHIPS/

Additional opportunities are listed on the BioMed Graduate and Postdoctoral Fellows page http://biomed.brown.edu/grad-postdoc/Funding/Funding.html

Proposals for some small grants, such as the Sigma Xi Grants-in-Aid, can be submitted directly by the student to the granting organization. Others, such as the NSF Doctoral Dissertation Improvement Grants, must be submitted through the BioMed Research Administration (BMRA) and the Brown Office of Sponsored Projects (OSP). It is critical find out as soon as possible whether a proposal must go through these channels because BMRA and OSP require a full six business days lead time on proposal submission. This policy is strictly enforced and can be somewhat confusing when university holidays might be involved. It is a good idea to contact the EEB Grants Coordinator (Tiffany Amaral), as soon as you know that you plan to submit a proposal, and at least a month in advance. See the EEB “One Month” and “Day Minus One” Policies for internal EEB deadlines. Some postdoctoral proposals have to be submitted through the equivalent offices at the host university, so advance planning and good communication with your potential postdoc advisor are particularly important for postdoc proposals.

3. GRADUATE PROGRAM REQUIREMENTS AND EXPECTATIONS

Research
Accomplishments in research are among the highest priorities in the Graduate Program in EEB. While we encourage students to take courses to fill gaps in their knowledge, students are admitted based on their promise as research scientists. Thus, we encourage students to initiate research activities immediately after enrolling and to maintain a focus on research early in their program. Students should dedicate at least one “course load” of research in each of their first four semesters so that good progress is made in defining a feasible thesis project. The EEB graduate Program does not require formal “rotation” projects, but if the student and Advisory Committee feel that such a course of action would help a student move toward a strong thesis proposal, such a program can be put in place. We also encourage students to move on from their undergraduate and masters thesis work, as a new set of challenges and ideas is important for developing breadth of training during the PhD. There is no set format for how this research effort is to be accomplished in the first two years; it may be in the form of independent reading, a critical review of methods, extensive time at the lab
bench, or an early field experiment in September before the winter approaches. What is important, however, is that students take the initiative to start something (with clear advisor oversight). It can take a few false starts to find a solid and tenable project, and the sooner this is achieved, the more time is available to focus dissertation research.

After this initial phase of research, a dissertation topic should be chosen during the second year of graduate studies in preparation for the Qualifying Exam. As part of the Qualifying Exam, the student prepares a research proposal describing plans for the dissertation research (see below).

**Teaching**
All EEB graduate students are required to serve as a teaching assistant (TA) for a minimum of two (2) semesters. These TA-ships are viewed as a critical part of a student’s general training as they offer an opportunity to review the material in a particular area of ecology and evolution. Serving as a TA in a course that one did not take as an undergraduate might be recommended by the student’s committee as a means of acquiring adequate intellectual breadth. The TA-ships provide important teaching experience, which can serve as a guide when that student moves on to a faculty position. The TA-ships also fill an important instructional role for the University, and provide an opportunity for graduate students to interact with talented Brown undergraduates. The faculty in the EEB program, and indeed the University in general, are committed to high quality teaching. We expect the same of our graduate students and encourage students to become fully engaged in the TA process as it broadens their training in many ways. The Sheridan Center for Teaching and Learning ([http://www.brown.edu/Administration/Sheridan_Center/](http://www.brown.edu/Administration/Sheridan_Center/)) offers many programs, including a Teaching Certificate that is helpful in various aspects of professional development.

**Thesis Proposal and Qualifying Exam**
Students should aim to present their thesis proposal to their Thesis Committee, and take their qualifying exam, by the end of their second year in the program. Delaying the qualifying exam beyond the end of October of the student’s 3rd year requires approval from the DGS. The proposal should review the relevant literature, identify a significant gap in our understanding of a problem, and propose a series of logically connected experiments that will fill those gaps. It is sometimes convenient to target each section (proposed Chapter) of the proposal towards a future paper to be submitted to a specific journal. The proposal should include a detailed timeline for the execution of the research that extends through the student’s remaining years. There is no single required format for the proposal, so students should discuss preferred formats with their advisors. Upper class students are usually happy to share their proposals to provide examples.
Grant proposal writing will represent an extremely important part of a student’s future. Thus, the thesis proposal should contain material that would be suitable for submission for an NSF Doctoral Dissertation Improvement Grant (DDIG). The guidelines describing this format should be obtained by the student from the NSF website. DDIG proposal are not accepted in all fields of biology, so students should confirm that their research project fits the goals of the DDIG Program. Moreover, DDIGs generally do not fund whole thesis proposals, but focus on improving a thesis underway. The EEB Thesis proposal will likely be broader in scope than a DDIG, so the parts of the Thesis Proposal that will be submitted as a DDIG should be clarified in the Thesis Proposal. DDIG deadlines are in November, so revision of the Thesis Proposal should incorporate comments from the Thesis Committee to increase the competitiveness of the DDIG. In 2012 there will be an internal EEB Dissertation Development Grant Program, with the same schedule as the NSF program. All eligible students are welcome to submit their DDIG-style proposals to this internal DDG program, as well as to NSF if the student works in a supported field.

The qualifying exam consists of an oral presentation of the written Thesis Proposal, and oral responses to questions from the Thesis Committee on the Thesis Proposal and on assigned material from the literature. In anticipation of the qualifying exam, the student should convene a meeting of the Thesis Committee, outline the plan for the Thesis Proposal, and seek input from the Committee on preparedness for the Exam. It is expected that the student and their primary advisor will be in close consultation about their readiness for the Qualifying Exam, so that preparation can proceed on a timely schedule. Typically, this Committee meeting will take place in the fall semester of the second year in anticipation of a late spring or early summer exam.

At the Thesis Committee meeting, each member of the committee will define a ‘topic area’ and assign a reading list that covers that area. Any material can be assigned by the committee member, in keeping with the goal of breadth and depth of training. Readings can include primary literature, books, chapters, analyses, etc. that focus on a particular sub-discipline that is important for training in the student’s research area. This reading list, or specified reading area, should be provided shortly after the Committee meeting, and enough in advance of the exam, so that the material can be read carefully.

The qualifying exam will focus primarily on the student’s thesis proposal, but questions can be on any topic within reason. **Three hours should be scheduled for the exam.** Normally, the student begins the exam with a brief oral presentation of the proposal (not more than 30 minutes long). Generally the committee does not ask questions during the presentation. The examination format involves two rounds of questions from all committee members. The first round of questions will focus on specific questions related to the Thesis Proposal, and the second round of questions will include questions on
broad background and the assigned reading. The questions are usually general in nature involving several smaller questions that might need to be worked out at the white/black board over a period of about 15 minutes. After the two rounds of questions from each committee member, other questions can be asked.

The Thesis Committee will assess the breadth and depth of the student’s knowledge in ecology and evolution, based on the response to all questions. Students are given a “Pass” where no further remedial work is needed and the student advances to Candidacy for the PhD, a “Conditional Pass” where some areas of knowledge or experimental design are lacking, requiring a make up exam, or “Fail” where the student is deemed unprepared to advance to candidacy for the PhD. In the latter case a completely revised examination process can be devised. At the discretion of the Committee, the student may be asked to leave the program if the deficiencies are severe.

A Qualifying Exam Report should be filed with the DGS and the EEB Graduate Program Coordinator summarizing the outcome of this process.

**Thesis**

The PhD dissertation is the primary goal of training in the EEB Graduate Program. This thesis should describe independent and novel research in an area of interest to the wider audience of ecologists and evolutionary biologists. Ultimately, this work will form the foundation for postdoctoral positions, faculty positions, and much of a student’s research career, so planning for the dissertation should begin early in the program.

The Graduate School has explicit guidelines for completion and filing of the dissertation. Students should consult the Graduate School web page to ensure that they comply with the appropriate dates, formatting requirements, signatures and associated forms.

PhD Theses in EEB commonly consist of three to five chapters describing independent and original research findings. A short introductory chapter often ties these research chapters together. However, it is the quality, and not the quantity of the work that deems a thesis suitable for a PhD dissertation. Today, few people read complete theses as whole document, so the focus should always be on targeting papers for publication in top journals in the field of study. While this guideline was recommended above for the Thesis Proposal, there is no strict requirement that the goals set out in the Proposal need to be achieved, item-for-item, in the final dissertation. Nevertheless, the Thesis Committee must approve significant deviations from the plan outlined in the Proposal before a student submits a body of work for the dissertation. As is true for all aspects of training in EEB, a student’s primary advisor and Thesis Committee are the first sources of information for questions about the suitability of material for the dissertation.
The complete dissertation should be submitted to all committee members at least two weeks before the scheduled defense date. This document should be compiled into a single PDF and include:

- Title Page
- Abstract for the whole dissertation
- Table of Contents
- Preface (including Acknowledgments, if desired)
- Chapters, each with its own title, abstract and bibliography.

Required formatting for the final version submitted to the Graduate School may be found on the Graduate School web site. The document presented to the committee does not have to conform to Graduate School formatting, but students are expected to produce a professional product.

The final date for submission of dissertations to the Graduate School in any given year is the first business day in May. The dissertation defense should be scheduled for no later than mid-April to allow time for revising the dissertation in response to feedback from the committee, and also time for final formatting.

Brown has one graduation per year. Commencement exercises and the conferral of all degrees takes place on the Sunday before Memorial Day.

**Publishable papers.** It is expected that chapters from the dissertation will appear as published papers in peer-reviewed journals. Students are encouraged to complete research and manuscripts early in their training and should strive for having at least one paper submitted for publication well before preparing the final dissertation. For planned submissions to journals before the dissertation defense, students are encouraged to seek feedback from the committee on the manuscript before submission. To make certain that all committee members are aware of chapters that have been submitted for publication, students should send the submitted version to all committee members (most journals send a compiled PDF of the manuscript and figures at the time of submission; sending this PDF to the committee would be a convenient way to send the manuscript). Students are encouraged to be proactive and to work closely with their advisors and thesis committee in devising a strategy for publishing thesis research.

**Good English.** Scientific literature should not be buried in poor prose simply because the material is complicated. Writing is a critical aspect of all scientific training, and is something that can be learned with good training. Success in this area can only be achieved by continual practice, and thus the dissertation should not be prepared as one final document at the end of a long research period. Fellowship proposals, the Thesis
Proposal, the DDIG, and drafts of early thesis chapters are intended to serve as milestones in the training process, and their value in teaching writing is a fundamental part of this training. Do not avoid the opportunity to prepare drafts of these documents, as they will aid in the timely completion of your dissertation.

**Master’s degrees.** For students wishing to leave the Program with a Master’s degree, there are two options: Master of Arts based on completed course work, and a Master of Science, which requires submission of a Master’s Thesis. The decision to leave the Program with a Master’s should be approved by a student’s Thesis Committee, and done in consultation with the DGS and with the Dean of Graduate and Postdoctoral Studies (http://biomed.brown.edu/grad-postdoc/). The Master’s Thesis document for completion of the M.S. should a manuscript suitable for submission to a peer-reviewed journal for publication. Master’s theses must comply with the guidelines described above for PhD dissertations.

Brown allows doctoral students to earn a master's degree *en route* to the Ph.D. if they do not already hold a master's degree in the same field. Doctoral students are eligible to earn an ScM degree after they have successfully passed the qualifying exam and the committee has approved the Dissertation Proposal document *in lieu* of a master’s thesis.

**Graduate Seminar Requirement**
EEB doctoral students are required to take at least three graduate seminar classes during their graduate tenure. A graduate seminar class is defined as a 2000-level class that generally has fewer than 15 participants and provides advanced training in the student's planned research field or provides relevant context for the planned research. The main activities in a graduate seminar class are generally reading, discussing and writing about primary literature, but other research-focused courses (such as skills or methods courses) are also acceptable. Consult the Director of Graduate Studies if questions arise about whether a course will count toward the seminar requirement.

**Registering for Courses**
Students in years G1-G3 should register for Graduate Independent Study (BIOL 2980; select the section supervised by your major advisor) and any other courses of interest. Students should select the S/NC grading option for BIOL 2980, unless the student and advisor agree that it should be taken for a grade. Adjust the number of credits of Graduate Independent Study (BIOL 2980) to match your preferred total load. Typically G1 and G2 students take 1-2 credits of 2980 and 1-2 other courses per semester. By the end of the second year, students should have accumulated a minimum of 8 tuition credits, or an average of 2 courses per semester. Your work in Graduate Independent Study (BIOL 2980) is expected to be a first-year research project or getting started on
defining your dissertation project.

Students in years 4 and beyond should register for BIOL 2990 every semester.

**Mandatory Research Trainings**

Federal, RI State and Brown University regulations require that all researchers receive training in laboratory safety, hazardous waste disposal, and responsible conduct of research (RCR). All first-year BioMed graduate students are required to take (and pass) the BioMed RCR Course. Students who fail the course will have to take it again in the second year. New students are advised to complete as many trainings as possible before the start of classes, so arriving on campus in August is recommended. Other trainings that may be required, depending on your research, include animal care and use, human research protections, biosafety, x-ray safety, and formaldehyde exposure control. Please ask your advisor or other members of the research group to determine which trainings are required for you.

**EEB Departmental Vehicle Policies**

EEB has a Yukon SUV and a 15-passenger van available for departmental business (research and teaching). The 15-passenger van cannot be used for business outside the state of Rhode Island (it cannot leave the state for insurance reasons). Also, per the university guidelines for the use of 12-15 passenger vans, there is a limit to the occupant number to 10 or less.

All drivers of EEB Departmental vehicles must complete the following:

1. Online training:
   Results should be sent to Shannon Silva
   All drivers of EEB need to check off the box for the 12-15 passenger van training only.

2. University Driver Authorization Form which are kept in the Walter Hall office and requires a copy of your license.

To reserve either the EEB van or the Yukon, please submit your request via email to Lianne Mendonca <lianne_mendonca@brown.edu> with the following information:

1. Which vehicle you are requesting
2. Name(s) of Authorized Driver(s) for this trip
3. Date/Dates vehicle is needed
4. Your business purpose and destination
5. An account name to charge mileage to
Lianne will respond as to whether the vehicle is available or not. If you should receive an out of office reply from Lianne, it will notify you to email another staff member with your request.

Vehicles should be returned with the gas tank full. Always purchase regular unleaded gas (not super or premium) for all department vehicles. Every Authorized Driver must have his or her own PIN number for the Wright Express Credit Card in order to purchase gas. Also, when purchasing gas please put in the odometer miles as you will be prompted to do so.

Vehicles must be returned to the correct Assigned Parking Spot in the Lot. There is a sign designating two parking spots specifically for EEB. The Department will get a $60 parking ticket if the vehicle is parked in another spot other than the designated one.

**EEB Departmental Seminars**

There are two seminar series that are an important part of the EEB graduate training program: the EEB Department Seminar on Tuesdays at noon, and the Brown Bag Seminar on Fridays at noon. We expect all graduate students to attend both the Tuesday seminar and the Brown Bag seminar. The Tuesday seminar series includes faculty from other universities who are invited by a specific EEB faculty member to speak to the general EEB audience about their ongoing research. Time slots will be made available during the day for any member of the Department to meet with the speaker. Moreover, graduate students usually take the speaker to lunch to have a more informal chance to meet and talk about their work.

The Brown Bag seminar usually involves an internal speaker, such as a graduate student, postdoc or faculty member in EEB. These are often less formal, and are an ideal context for presentation of earlier Master's work, a project that is in progress, or incomplete ideas that need some feedback. While it is easy to decide that you are too busy to listen to a talk outside your field, doing so is a fundamental aspect of building breadth and depth of knowledge. The seminars also provide a common body of material for discussion among all members of the department, and thus are instrumental in maintaining our intellectual culture and community.

**Career Development**

*Scientific meetings.* Students should attend a scientific meeting in their chosen field in each year of their program. Financial assistance from the Division of Biology and Medicine ([http://biomed.brown.edu/grad-postdoc/GS/GS_PoliciesC.html](http://biomed.brown.edu/grad-postdoc/GS/GS_PoliciesC.html)) and the Graduate School is available. BioMed will provide some funds for one meeting per year.
Postdoctoral and professional positions. The final goal of the EEB Graduate Program is to place its graduates in competitive positions that enable them to reach the career goals. Students should begin considering potential postdoctoral positions during the 4th year of their program. The primary advisor and Thesis Committee are the best source of suggestions, as this is usually a matter of fit between past training and future interests. Potential postdoctoral advisors may not have funds to support fellows, so plan on writing a Postdoctoral Fellowship. These applications can take a significant block of time to prepare (1-2 months), and this should be done well in advance of completing the dissertation so that a lag in funding can be avoided.
COURSES OF POTENTIAL INTEREST TO EEB GRADUATE STUDENTS

This list is intended as a resource for students and Advisory Committees in planning individualized curricula. Courses come and go, so this list should not be viewed as definitive.

Introductory Courses - appropriate for students changing fields, have holes in background, or good TA opportunities:
- BIOL 0310 - Introduction to Developmental Biology
- BIOL 0380 - The Ecology and Evolution of Infectious Disease
- BIOL 0390 - Vertebrate Evolution and Diversity
- BIOL 0400 - Biological Design: Structural Architecture of Organisms
- BIOL 0410 - Invertebrate Zoology
- BIOL 0420 - Principles of Ecology
- BIOL 0430 - The Evolution of Plant Diversity
- BIOL 0440 - The Plant Organism
- BIOL 0460 - Insect Biology
- BIOL 0470 - Genetics
- BIOL 0480 - Evolutionary Biology
- BIOL 0800 - Principles of Physiology

Advanced Undergraduate/Graduate Courses:
- BIOL 1100 - Cell Physiology and Biophysics
- BIOL 1130 - Cell Structure and Movement
- BIOL 1160 - Principles of Exercise Physiology
- BIOL 1180 - Comparative Animal Physiology
- BIOL 1270 - Advanced Biochemistry
- BIOL 1410 - Evolutionary Genetics
- BIOL 1420 - Experimental Design in Ecology
- BIOL 1430 - The Computational Theory of Molecular Evolution
- BIOL 1440 - Marine Biology
- BIOL 1460 - Microbial Diversity and the Environment
- BIOL 1470 - Conservation Biology
- BIOL 1475 - Biogeography (pending approval by CCC)
- BIOL 1480 - Terrestrial Biogeochemistry and the Functioning of Ecosystems
- BIOL 1490 - Human Impacts on Ecosystem Functioning
- BIOL 1500 - Plant Physiological Ecology
- BIOL 1800 - Animal Locomotion
- BIOL 1880 - Comparative Biology of the Vertebrates
- BIOL 1940X - Topics in Conservation Science
- BIOL 1940Y - Origins of Multicellularity and the Evolution of Germ Line

Graduate Courses:
BIOL 2010 - Quantitative Approaches to Biology (an MCB core course)
BIOL 2060 - Ultrastructure/Bioimaging
BIOL 2090 - Topics in Respiratory Physiology
BIOL 2140 - Principles in Experimental Surgery
BIOL 2310 - Analysis of Development
BIOL 2320 - Current Topics in Developmental Biology
BIOL 2320A - Systems Biology in the Study of Development and Evolution
BIOL 2320D - The Biology of Aging
BIOL 2430 - Topics in Ecology and Evolutionary Biology (EEB Gradsem Fall; 2-4 specialized seminars offered every Fall semester)
BIOL 2440 - Topics in Ecology and Evolutionary Biology (EEB Gradsem Spring; 2-4 specialized seminars offered every Spring semester)
BIOL 2470 - Seminar in Genetics and Genomics (MCB occasional seminar)
BIOL 2980 - EEB Graduate Independent Study (for graduate years 1-3)
BIOL 2990 - EEB Thesis Preparation (for graduate years 4 and beyond)
BIOL 3644 - Integrated Medical Sciences I - Human Anatomy

Statistics:
PHP 2500 - Introduction to Biostatistics
PHP 2510 - Principles of Biostatistics and Data Analysis
PHP 2530 - Bayesian Statistical Methods
PHP 2511 - Applied Regression Analysis
PHP 2620-S01: Statistical Methods in Bioinformatics

Geosciences:
GEOL 1100 - Global Descriptive Oceanography
GEOL 1110 - Estuarine Oceanography
GEOL 1120 - Paleoceanography
GEOL 1130 - Ocean Biogeochemical Cycles
GEOL 1150 - Limnology
GEOL 1330 - Global Environmental Remote Sensing
GEOL 1350 - Weather and Climate
GEOL 1370 - Environmental Geochemistry
GEOL 1380 - Environmental Stable Isotopes
GEOL 1950 - Geomicrobiology
GEOL 2330 - Advanced Remote Sensing
GEOL 2910 and GEOL 2920 - Special Topics various, including 2920E Intro to Organic Geochemistry and 2910U Climate Variation

Engineering:
ENGN 0310 - Mechanics of Solids and Structures
ENGN 0040 Dynamics and vibrations
ENGN 0810 Fluid mechanics
ENGN 1000 Projects in Engineering Design
ENGN 1210 - Biomechanics
ENGN 1230 Instrumentation Design
ENGN 2320 Experimental Mechanics

Environmental Studies (Mix of Grad and Undergrad):
ENVS 1330 - Global Environmental Remote Sensing (GEOL 1330)
ENVS 1350 - Environmental Economics and Policy
ENVS 1455 - Marine Conservation Science and Policy
ENVS 1460 - Microbial Diversity and the Environment (may be listed in Bio next year)
ENVS 1500 - Human Impacts on Ecosystem Function
ENVS 1492/1493 - Semester in Environmental Science at Marine Biological Laboratory (MBL), Woods Hole (Semester-long program in ecosystem science, contact H Leslie, J Rich or K Foreman for details)
ENVS 1900 - Introduction to Geographic Information Systems for Environmental Applications (GEOL 1320)
ENVS 2010 - Special Topics in Environmental Studies (Graduate Seminar)
ENVS 2680 - Ecosystem Modeling for Non-Programmers (Taught at MBL in January)

Applied Math:
APMA 0330 and APMA 0340 - Methods of Applied Mathematics
APMA 1070 - Quantitative Models of Biological Systems
APMA 1080 - Statistical Inference in Genomics and Molecular Biology
APMA 1940N - Introduction to Mathematical Models in Computational Biology
APMA 2810Y - Discrete high-D Inferences in Genomics

Computer Science:
CSCI 1810 - Computational Molecular Biology
CSCI 1950L(S01) - Algorithmic Foundations of Computational Biology
CSCI 2950C - Topics in Computational Biology

Chemistry:
Chem 1220: Computational Tools in Biochemistry and Chemical Biology