This handbook summarizes the Ecology & Evolutionary Biology (EEB) Graduate Program policies and procedures and is updated annually. This guide to EEB graduate study contains information about exams, monetary support, required and recommended courses, and regulations and rules specific to this graduate program. It is intended to supplement the General Announcements by providing a more detailed description of the EEB graduate program.

In addition to being in agreement with the policies in this handbook, Ecology & Evolutionary Biology graduate students must also be in agreement with the General Announcements and Code of Conduct. In the case of conflicting information, university-wide regulations take precedence over department-wide regulations, which take precedence over research group-wide regulations. When in doubt, students should seek help first at the graduate program level (graduate program administrator, faculty director of the graduate program, research advisor, and/or department chair) and then at the central administration level (office of graduate and postdoctoral studies).

Please contact Susan Cates, Rachael Eaton, or Tom Miller with suggestions for additions or clarifications.
GRADUATE PROGRAM DIRECTOR:
  Miller

GRADUATE STUDENT ADVISORY COMMITTEE:
  Miller (Chair)
  Kohn
  Saltz (sabbatical leave in Spring 2018)

BIOSCIENCES GRADUATE STUDENT GRIEVANCE COMMITTEE:
  Matthews (Chair)
  Dunham
  Tao
  Wagner

GRADUATE RECRUITMENT AND EVALUATION COMMITTEE:
  Miller (Chair)
  Correa
  Dunham
  Egan (sabbatical leave in Spring 2018)
  Kohn
  Rudolf
  Saltz (sabbatical leave in Spring 2018)
  Siemann (sabbatical leave AY2017-18)

BIOSCIENCES SAFETY AND RESPONSIBLE CONDUCT OF RESEARCH COMMITTEE:
  Beason-Abmayr (Chair)
  Matthews
  Nikonowicz
  Rudolf

BIOSCIENCES OMBUDSPERSON:
  Gustin
EEB graduate students are welcome to ask any of our staff for assistance at any time. This page provides information regarding each staff member's job title.

The first help resource for graduate students is Rachael Eaton, the staff graduate program administrator. She is the contact for all graduate student records and travel award applications. Her direct back-up for academic matters such as academic records, university offices and procedures, travel, awards and scholarships is Susan Cates. Additional contacts for administrative support when Rachael is unavailable are Lisa Evans at the reception desk, and Shaterica Washington in W100F GRB Hall, and Pedro Muniz in W132 GRB Hall. Diane Hatton assists all graduate students who apply for independent funding and/or other scholarships and fellowships, or whose advisors submit federal grants for their funding. Nidia Aguilar, Connie Myrick, and Lupe Dominguez assist students making lab purchases (please seek instructions from your lab-mates first). Juan Sanchez assists with Federal Express packages. Gerald Mixon is the contact for facilities issues such as installation of large equipment, building maintenance and refurbishments.

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<td>Facilities Admin</td>
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<td>Faculty Coordinator</td>
<td>Susan Merz</td>
<td>X4015</td>
<td>smerz</td>
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## EEB Graduate Student Association (EEB-GSA)

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<tr>
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<td><a href="mailto:mld1@rice.edu">mld1@rice.edu</a></td>
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![Image of group photo]
**Faculty:**

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<tbody>
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<td>Amy Dunham, Assistant Professor</td>
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<td>X2792</td>
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<td>Scott Egan, Assistant Professor</td>
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<td>Michael Kohn, Associate Professor</td>
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<tr>
<td>Luay K. Nakhleh, Associate Professor (CompSci)</td>
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<td>Evan Siemann, Professor</td>
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<tr>
<td>Yousif Shamoo, Professor (BCB)</td>
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Lydia Beaudrot, Assistant Professor starting July 1, 2018

**Huxley Fellows, Rice Academy Fellows, and Teaching Staff:**

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<td>Glenn Ray Hood, Rice Academy Fellow</td>
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<tr>
<td>Nick Keiser, Rice Academy Fellow</td>
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<tr>
<td>Scott Solomon, Professor in Practice</td>
<td>ses4</td>
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</tr>
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EEB Student Timeline

- **Year 1**
  - **Fall**: Meet with Your Advisor & GAC
  - **Spring**: EBIO Courses: 520 or 581 591 (if TA) Topics Other 500-lvl
  - **Summer**: EBIO 801

- **Year 2**
  - **Fall**: EBIO Courses: 520 or 581 591 (if TA) Topics Other 500-lvl
  - **Spring**: EBIO 801
  - **Summer**: EBIO Courses: 520 or 581 591 (if TA) Topics

- **Year 3 and Beyond**
  - **Fall**: EBIO 801, 541, 585
  - **Spring**: WRITE AND DEFEND THESIS
  - **Summer**: Qualifying Exam by end of 5th semester

- **Grad Student Science Day**
  - Before end of 2nd semester: meet with EEB portion of dissertation committee
  - Grad Student Science Day
  - Grad Student Science Day
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1. Goals of the Graduate Program

Graduate education provides advanced specialized training beyond the baccalaureate program. The goals of the graduate training provided by the Ecology & Evolutionary Biology graduate program are to guide students as they develop into graduates that:

• Are knowledgeable of past and current research accomplishments and techniques in ecology and evolutionary biology
• Are adept in independent problem solving and critical thinking skills
• Have demonstrated capacity for independent, publishable research
• Can thoughtfully relate their research to that of others in their field
• Possess effective written and oral communication skills
• Assume responsibility for continued professional growth
• Continuously strive to acquire the knowledge and skills needed for scholarly achievement and success in their chosen career

Graduate study requires that students be committed to:

• Assuming responsibility and demonstrating initiative in their research and scholarly activities
• Engaging in active learning, including participating in weekly departmental and graduate student seminars, attending relevant seminars outside of the department, and reading extensively within their chosen field of study
• Initiating and completing innovative and productive research activities
• Improving oral and written communication skills
• Accepting and providing constructive scientific criticism
• Exercising high professional standards in all aspects of work

The Ecology & Evolutionary Biology graduate program faculty members are committed to training and mentoring graduate students to reach their full potential as scientists. Faculty seek to facilitate students’ progression towards fulfilling and exciting careers in academia, industry, or government, and to develop their skills as future leaders in science and society.

This handbook outlines requirements for earning an EEB Ph.D. or M.A., and also presents suggestions for beginning a successful career in science. Meeting these requirements is necessary, but not necessarily sufficient; a given advisor and/or dissertation committee will often determine additional requirements above and beyond the departmental minimum. For example, some advisors view grant writing as a fundamental part of graduate science education and will require evidence that a student regularly applies for outside funding. It is strongly suggested that, early in the process, a student talks with her/his advisor (or potential advisors) to understand the advisor’s philosophy and to understand what will constitute acceptable progress in his/her lab. Students should note that there are a number of rules that appear in the Rice University General Announcements that apply to all graduate students but do not appear in this document.
2. Doctor of Philosophy Degree Program in Ecology & Evolutionary Biology

Most of the formal course studies will be completed in the first year of residence to allow the students to begin thesis research at the end of their second semester at Rice. During the first semester, the student will meet with his or her major advisor (or provisional major advisor) and the GSAC (Graduate Student Advising Committee). The graduate administrator will schedule this meeting. Together the participants will outline a plan for the student’s first year.

Among a student’s goals during the first year should be to think deeply, read broadly, discuss ideas frequently with other students and faculty, develop needed lab, field, and computational/theoretical skills, and begin preliminary research, all in service of developing dissertation project ideas. This is an excellent opportunity in which to talk with different faculty members so that a student will have an informed set of choices for composing a committee. Appropriate committee members are those faculty who think what the student is doing is interesting, and have expertise that will be useful in carrying out the project.

Students should have completed coursework in ecology, evolution (or equivalent), mathematics (including calculus), and statistics prior to admission. Deficiencies in these subject areas should be made up during the first year of residence. Students who have not yet taken the equivalents (as determined by the GSAC) of EBIO 325 (Ecology) and EBIO 334 (Evolution) should complete these courses at the first opportunity.

Course requirements:
• EBIO 325 (Ecology) or equivalent
• EBIO 334 (Evolution) or equivalent
• EBIO 569 (Core Course in EEB); must be taken first time offered after student matriculates
• EBIO 561/562/563/568 ("Topics"); 2 semesters of any combination of Topics courses
• EBIO 591 (Graduate Teaching); 2 semesters
• EBIO 585/586 Departmental Seminar; every semester
• EBIO 801; required after first year of residency

Students must enroll in EBIO 585/586 during all years of residency. Students must complete at least six credit hours in a “Topics” course of their choice (EBIO 561/562/563/668) before the qualifying exam, and students are strongly encouraged to take at least one Topics course per semester during all years of residency. Students must complete two semesters of EBIO 591 during their first four semesters to gain teaching experience; additional teaching experiences are available on an optional basis.
Graduate students must be registered for a minimum of 9 hours each semester (including summer) to receive stipend, tuition waiver, and other subsidies. In summer, and after the core course requirements are completed, EEB graduate students will commonly enroll in EBIO 801 Graduate Research for 9 credit hours. If you have registered in additional courses, you can adjust the number of EBIO 801 hours accordingly.

Students must maintain an overall average GPA of 3.0 (B) to remain in good academic standing. In the case where the average GPA falls below 3.0, the EEB faculty can elect to place the student on academic probation to allow them time to improve their GPA through additional coursework, or to dismiss the student from the program. In the most common case, students receive academic probation for one semester.

3. Master of Arts Degree Program in Ecology & Evolutionary Biology

In addition to the general university requirements, the Master of Arts in Ecology & Evolutionary Biology requires the completion and public defense of a thesis embodying the results of an original investigation. The course requirements are the same as those listed for the Doctor of Philosophy degree, except for the number of graduate research hours required to meet the minimum stated in the General Announcements for a Master's degree. At least one committee meeting will be held for M.A. students in the second year of residence wherein the student will present their thesis outline. Once the committee approves the thesis outline, no other preliminary examination or report is necessary prior to the final oral defense of the written Master's thesis.
4. Evaluation of Progress in Graduate Study

Requirements for Satisfactory Annual Progress

1. Annual Dissertation Committee Meeting
At least one dissertation committee meeting is required annually. In the second year, the dissertation committee meeting must occur in the fall, prior to December 1. Participation of the external (outside BioSciences) committee member is not required at this point, but this member must be added no later than the committee meeting of the student’s third year. It is the student’s responsibility to schedule each dissertation committee meeting after coordinating with the graduate program administrator and the dissertation committee. At the completion of each meeting, the major advisor will, in consultation with the committee members and the student, briefly summarize in writing the student’s past progress as well as recommendations and requirements for future progress. This 1-page form will be signed by the committee members and the student and will go on file with the graduate administrator.

2. Participation in Graduate Student Science Day
One day in December is set aside for short presentations by EEB graduate students to the whole program. The goals of this day are to:
   a) foster awareness of research currently being conducted in the department,
   b) to encourage feedback that will improve research projects and
   c) to give students practice in the fundamentally important skill of presenting research via a professional-meeting style talk.

While assessment is not a specific goal of Grad Student Science Day, students should be aware that their talks may be a major route by which some faculty (e.g., those not on particular dissertation committees) learn about the progress the student is making, and therefore that the talk may play a role in the faculty discussions of annual progress. First year students may choose to talk about previous research (e.g. from a master’s thesis done elsewhere) or simply present a talk on a topic of interest and how it relates to a potential dissertation. A Science Day Checklist to help organize your research talk and a document with recommendations for creating an outstanding research presentation are included in the forms appendix of this handbook.

3. Attendance at the departmental seminar (EBIO 585/586)
The department seminar is required except under exceptional circumstances. In addition, participation in afternoon and evening receptions for visiting speakers is an excellent opportunity to increase your scientific network and talk science with leading researchers.

4. Submit proposals for outside research and stipend funding annually
Procuring funding for research is a critically important skill for working scientists, and one that is best developed through frequent grant applications. While grant opportunities will vary among students (e.g., non-U.S. citizens have fewer options than citizens), students should make attempts to procure outside research and stipend funding annually.
5. Completion of the annual report
The annual report serves as a record of student progress towards the Ph.D. The report will be due at the graduate administrator’s office by 1 December. It consists of:

- A standard academic CV (including, but not limited to, publications, presentations, and funding received)
- An overall abstract of the dissertation.
- For students in their first two years who have not yet settled on a dissertation plan, a paragraph describing research interests and likely directions is sufficient.
- For advanced students in or beyond their third year, abstracts of the dissertation chapters.
- A 1-page summary of what has been accomplished in the past year, covering the same areas mentioned (above) in the list of goals. Include a list of all attempts to gain research or stipend funding, with an indication of status (awarded, declined, or pending).
- A 1-page plan listing professional goals for the coming year. This plan could include experiments to be run, data to be collected, manuscripts/dissertation chapters to be written, manuscripts to be submitted, meetings, presentations, funding applications, teaching, and other goals.

**Evaluation of Annual Progress**

During December, a meeting of the EEB faculty will take place to evaluate each student in the graduate program. Each student's annual report and the student’s dissertation committee report will be available to all faculty before and during discussion. Ratings will be based on student research activity and productivity as well as compliance with the basic requirements listed above. It is expected that the majority of students will receive ratings of Satisfactory. Failure to meet any of the basic requirements listed above will result in an automatic unsatisfactory rating. In cases where the student has met the basic requirements but is deemed to be making insufficient progress, the faculty may either give an Unsatisfactory rating, or dismiss the student from the program, based on a 2/3 majority vote. In cases of unsatisfactory progress, the student will be given a timeline to meet the requirements laid out in the progress evaluation. If the requirements are not met in accordance with the timeline, the student will be dismissed from the program. Ratings of Unsatisfactory in two consecutive years will lead to automatic dismissal.

Possible ratings for Annual Progress:

- Excellent
- Satisfactory
- Unsatisfactory
- Dismissed
5. Committees

Students tend to underestimate the value of a committee in designing a timely and feasible dissertation. Furthermore, when grant proposals are submitted and upon entry into the job market, students often rely on committee members for letters of reference. Thus, it is important to provide committee members with the opportunity to be familiar and enthusiastic about the topic, design, and execution of the dissertation through frequent meetings.

Progress review committees in the Ecology & Evolutionary Biology program must have at least 4 members. Three of the four must be EEB Faculty members and one of those three will be the student's thesis advisor; the other two EEB members can include professors, associate professors, assistant professors, and faculty fellows. The fourth member must be an outside member, i.e., a faculty at Rice with a primary appointment outside the Department of BioSciences. Huxley Fellows can be EEB members with approval from Graduate Studies, however, note that Huxley Fellows often have tenure of three years or less. Professor Nakhleh may be used as an internal or external member but cannot be both. Ask prospective committee members if they would be willing to serve on your committee. Once you have decided on your committee members tell the graduate administrator.

Need outside member ideas?
Common choices are faculty in Statistics (STAT), Computational and Applied Mathematics (CAAM), Psychology (PSYC), and Earth, Environmental & Planetary Sciences (ESCI). Also talk to your advisor and other grad students for ideas. The outside member must be added no later than the committee meeting occurring in the student's third year.

By the end of the second semester, the student must have formed and met with the EEB portion of a dissertation committee. Students should meet with the dissertation committee annually through the duration of their graduate tenure. Students should consult with the graduate program administrator for help scheduling the committee meeting and finding an available room. Students should bring a blank copy of the Graduate Student Committee Meeting form to each meeting. After the committee completes the form, student must return it to the graduate program administrator to be filed in the student's departmental record. If the committee requires any additional reports, assignments, or courses to broaden your knowledge regarding your research, the due date for these additional requirements should be written on the Graduate Student Committee Meeting form.

You can have additional members from within Rice or from outside universities with approval from the EEB Graduate Student Advisory Committee (GSAC). Officially, the graduate program director appoints each student's committee, but typically the advisor and student suggest committees and the director approves these suggestions. The graduate program director approves all changes to the committee.
6. Qualifying Exam and Advancement to Candidacy

Requirements for Advancement to Candidacy

1. Completion of all degree requirements and any additional coursework required by the student's major advisor and/or dissertation committee, and all University requirements listed in the General Announcements for doctoral candidacy.

2. The qualifying exam to achieve doctoral candidacy (referred to also as the candidacy exam) is a written dissertation project proposal of 8 single-spaced pages, excluding references and figures. The goals of this proposal are a) to ensure that students embark on their dissertation research with clearly-formulated questions and a plan, b) to present this plan to the committee in a comprehensive way, c) to develop general written communication and grant-writing skills, and d) to give the student a head start on applying for potential sources of research support. Proposals should include preliminary data. It is strongly suggested that a first draft of the proposal be given to the student's major advisor 60-90 days prior to the expected date of the candidacy exam. By doing so, a student increases the chances of producing a high-quality proposal and should be able to avoid last-minute postponements of the candidacy exam. The proposal must be approved by the student's major advisor prior to distribution to the dissertation committee, and the committee and the Graduate program administrator must receive the proposal no less than 2 weeks prior to the date of the scheduled candidacy exam.

3. An oral candidacy exam must be taken by the end of the 5th semester. The exam includes a) a required talk (suggested time: 20-30 minutes) presenting the student's research plan; b) questions from and discussion with the committee on the student's research plan; and c) questions from the committee on general knowledge of ecology and evolutionary biology at the level of an introductory ecology or evolution course. It is the student's responsibility to schedule the exam after coordinating with the dissertation committee. It is highly suggested that the student meet with each of his or her committee members individually, at least two months prior to the scheduled exam, to find out their expectations on what constitutes general knowledge and to get their suggestions for readings.

Students not passing the exam on the first attempt will have one opportunity to retake the exam; this second attempt must normally occur by the end of the 6th semester. On a student's first exam, the outcome will be either “Pass” or “Retake”; on a student's second exam, the outcome will be either “Pass” or “Fail”. Under extraordinary circumstances, a student may petition the GSAC for an extension of the candidacy exam deadline past the 5th semester. The GSAC will make a recommendation to the department chair, who will make the final decision on whether the extension is granted.

After passing the qualifying exam, students should fill out the petition for candidacy in the appendix of this handbook to file for doctoral candidacy. Submit the completed form to the graduate program administrator, who will supply the supporting documents. The master's thesis and defense replace the qualifying exam for students who are approved to continue to the doctorate after receiving The M.A. degree from the EEB program. Questions about filing for doctoral candidacy should be directed to the graduate program administrator.

Dissertation

A PhD dissertation has a minimum of three publishable units. Students considering academia should likely aim for more than three publications from their dissertation work. It is wise to consult with the major advisor on this topic, as fields of study and labs differ. In addition, it is important to consult with the major advisor on the timing of manuscript submission. While some advisors may be fine with submission after the degree has been awarded, others may make the scheduling of a dissertation defense contingent upon submission or publication of at least some of the dissertation work.

For the format and deadlines associated with the preparation of the dissertation see the Rice University guidelines. The structure of the dissertation (number and format of chapters, etc.) will vary and will be designed in consultation with the major advisor.

Public Oral Defense

An oral defense of thesis is required. The student’s advisor must give approval before a student can request to defend their thesis. After approval is given, a student must talk to the graduate administrator to reserve a room and to create an event to publicly announce to the Office of Graduate Studies at least two weeks prior to the defense date. University rules also require that a copy of the thesis be available in the department office not less than two calendar weeks prior to the date of the oral defense. The department copy should be sent to the EEB graduate program administrator. The student should also send a copy of the thesis to their committee no less than two weeks prior to the date of their oral defense. The graduate administrator requires a pdf copy of the thesis, but students should check with their committee members to find out if they prefer a pdf or a printed copy. The student will present a public presentation of the thesis results. The presentation will be followed by an examination of the student by the dissertation committee.

Students defending a master’s thesis must follow the same protocol, but their deadline for publicly announcing the defense and providing the graduate administrator and committee members a copy of the master’s thesis is at least one week prior to the defense date.
8. Department Seminars – EBIO 585/586

Graduate students are required to register and attend the departmental seminar series, EBIO 585/586, usually scheduled on Fridays at 4:00 pm. A reception often follows the seminar. Ecologists and Evolutionary Biologists from outside of Rice meet with faculty and share their latest findings through a seminar presentation. During the seminar speaker’s visit graduate students can sign up through the graduate administrator for one of the limited spots to have lunch with the seminar speaker at Rice’s Cohen House faculty club. Students should also attend the additional EEB seminars presented in the Biosciences Vanzant Seminar Series on Monday’s at noon.

9. Student Seminars – EBIO 520 and EBIO 581

Each semester, one of the two EEB graduate student-directed seminar courses, EBIO 520 or EBIO 581, meets once a week (usually at noon, and lunch is provided). At the start of the semester the EEB students who choose to participate will register for one of the following two courses, after collectively choosing which course will meet on Wednesdays at noon for that semester. The faculty director of the graduate program is the instructor, but the course topics and events are student-led and organized.

**EBIO 520 STUDENT SEMINAR IN EEB**

Student-led presentations of work in progress, research ideas, and topics of research interest. Designed to enhance oral presentation skills and facilitate discussion of research ideas. Topics of discussion range from professional development and CV swaps to presentation practice and web presence, etc.

**EBIO 581 EEB OUTREACH DEVELOPMENT**

This course is for Rice students interested in developing life science outreach initiatives that target underserved K-12 students in the Houston area. Goals of the course include developing hands-on teaching modules related to Texas science education standards and expanding graduate student teaching experiences beyond the University setting.
10. TEACHING ASSISTANT APPOINTMENTS IN ECOLOGY & EVOLUTIONARY BIOLOGY

EBIO 591

During years one and two, students are required to complete two total semesters (one semester per year) of EBIO 591, Graduate Teaching in Ecology & Evolutionary Biology wherein they act as teaching assistants. In EBIO 591, students gain training and experience in teaching by serving as discussion leaders, field course assistants, and graders in sections of undergraduate courses. Prior to teaching, students are required to attend departmental and university training workshops to understand expectations, regulations, and strategies for working with undergraduates. Course assignments for teaching assistants are decided by the EEB graduate program director with input from the department chair, course instructors, students, and advisors. Efforts are made to match students to their preferred courses or those that strengthen their foundational skills.

Additional Teaching Opportunities in BioSciences

EEB graduate students have the opportunity to gain additional teaching experience throughout their tenure at Rice by serving as teaching assistants in the third year and beyond. Teaching assistantships are valuable training opportunities that help prepare students for their future roles as instructors and mentors. Teaching also offers training opportunities broadly applicable for careers in academia and beyond (e.g. leadership, subject mastery, presentation and public speaking skills, establishing goals and expectations, and evaluating others’ performance).

EBIO 116

EEB graduate students have the opportunity to serve as lead instructors in EBIO 116. EBIO 116 is a freshman seminar that introduces freshmen to biosciences research at Rice. Freshman students read and discuss scientific literature and tour Rice labs to see facilities and meet faculty and students. The goals of this seminar are to introduce freshmen to the excitement of research while providing interested graduate students a venue to hone their teaching skills. Graduate students serve as course instructors in a mentored, but independent, section format over seven weeks. Student instructors must have the consent and support of their thesis advisors to participate.
11. **1ST YEAR STUDENT MENTORING PROGRAM**

Two to three first-year students are paired with two to three advanced students, usually a second-year student and a more advanced student. These mentoring groups meet for lunch several times during the first year to provide advice and support for classes, rotations, adjusting to graduate school, and life in Houston. In addition to this formal mentoring program, any student experiencing difficulties is encouraged to talk with the EEB graduate program director, the EEB graduate administrator, the department chair, or the department assistant chair, who will endeavor to provide assistance. Additional resources are listed in the handbook chapter entitled Student Resources.

12. **FINANCIAL SUPPORT**

As an entering student, the Ecology and Evolutionary Biology graduate program will provide a stipend of $19,125 for 9 months, normally for a period of five years. Including summer salary support ($6,375) typically provided by your advisor, the total 12 month stipend is $25,500. As a recipient of the program graduate stipend, the Office of Graduate and Postdoctoral Studies will provide you with a full tuition waiver, a value of over $43,220 per year. For students to receive these awards, they must be full-time Rice University Graduate Students (registered for a minimum of 9 credit hours). Financial support (program stipend and associated tuition waiver) beyond 2017-2018 will depend upon satisfactory performance and reasonable progress toward your degree.

**Fellowships**

Many of the students in the Biosciences Department have been awarded independent funding from sources such as the National Science Foundation Graduate Research Fellowship Program, other federal funding sources, private funding sources, and university fellowships. Your thesis advisor can help you determine the fellowships for which you would be most competitive. (Be aware that the NSF GRFP can only be awarded in your first or second year of study.)

- When you apply for a fellowship, please consult with Diane Hatton on drafting the proposal.
- If you are granted a fellowship, please email Connie Myrick. She will begin the paperwork that needs to be filled out.

**Research Funding**

Sources of funding for student research vary across labs. In some cases, the student’s research is closely allied with that of the major advisor and is funded via his/her grants. In other cases, students will find it necessary to obtain funding from outside sources for particular projects. Philosophies differ across advisors and it is wise to have an early and frank discussion with your advisor about these issues.
**Summer Pay**

Nine months of your salary comes from either the department, a fellowship, or your advisor. Summer salary typically comes from your advisor’s research or start up fund, and it depends on available funds and your progress; as decided by your advisor. All students should discuss summer salary with their research advisor at the beginning of the spring semester, preferably in January. Notify Rachael Eaton regarding your source of funding for summer salary.

**Bonus Pay**

If an EEB graduate student who would otherwise have been supported by a university fellowship gets stipend support that would not otherwise result in an increase in stipend, their pay will be increased above the department stipend level by 10% of the amount saved by the department. Stipend support from an advisor’s grant does not count. Summer support does not count because the department does not pay summer support (advisors do). Research support (money not for stipend) does not count for bonus pay.

**Example Bonus Pay Calculations**

1) Student A gets a fellowship that pays for a semester of stipend during the academic year (one-half the amount of the 9-month department stipend). They will have their academic year stipend increased by 10% X (1/2 of the 9 month stipend).

2) Student B gets a fellowship that pays their stipend for the 9-month academic year. The department is saved the full nine-month stipend, so the new stipend will be increased by 10% of the normal 9-month stipend, to a total stipend of 110% of the 9-month academic year stipend.

3) Student C gets an NSF GRFP award that increases their stipend to $32,000 per year (calendar year - not academic year). The 9-month academic year stipend in this case would be $24,000. If this amount exceeds 110% of the normal 9-month stipend, then the student will get no additional money from the department. Otherwise, the student will receive the amount from the department required to bring them up to an academic year stipend totaling 110% of the normal 9-month stipend. There might be situations more complex than these but we will attempt to apply the spirit of the policy in each case.

**Reimbursements (Rachael Eaton, X4230)**

- Please check with Rachael Eaton before expending your personal funds on research or travel. Often, these expenses can be borne directly by the department and the student won’t have to wait on a reimbursement.
- Please see the handbook chapter on Graduate Student Travel before planning any travel.
- In the case where you can’t avoid reimbursements for research expenses, bring Rachael your itemized receipts signed by your advisor, noting the fund the expense that should be charged to and the reason for the expense.
- Rice is a tax-exempt educational institution in the state of Texas. Be sure no Texas sales tax or Texas hotel tax is charged. Tax exemption forms can be obtained from department staff.
- If Texas sales or hotel taxes are charged, the student is responsible for paying the tax.
13. Graduate Student Travel

Graduate students can apply for the “BioSciences Graduate Student Travel Award” to support travel to scientific meetings (e.g. conferences, symposia, workshops). The department will dispense travel awards - depending on the available funds and number of applicants in a given year - for out of pocket expenses in the categories of transportation, shared lodging, meals, and registration. If more students apply than funds can support in a given year, applications will be prioritized based on seniority, academic standing, time of last travel support, and importance of the meeting for the professional development of the student.

The graduate program administrator will issue a call for travel award applications to encourage students to apply for any conference travel anticipated in the coming year. When they receive the email reminding them to apply, students should ask their research advisors if they recommend a particular conference.

To be eligible for this support, the student should submit at least one other travel award application for a conference travel award, a Rice Graduate Student Association travel award, or a Rice Institute of Biosciences & Bioengineering (IBB) travel award. Links to the Rice resources are provided in the handbook chapter entitled Student Resources.

Students are expected to present at the meeting (talk or poster presentation), apply for any available travel stipends/awards available through the respective meeting, apply for any student awards associated with the meeting (e.g. best presentation), and provide the title for their poster or presentation on the Graduate Student Travel Form, which should be submitted to the graduate administrator. (See the handbook appendix for the travel award application form.)

If granted travel support, select your plane itinerary and find the link for your conference registration and hotel, then make an appointment with the graduate program administrator to charge these expenses directly to the department. (The administrator does not fill out your online forms; she just enters the credit card information in the payment section.) Note that the graduate program administrator can assist in booking your travel even if your PI or another Rice fund will cover the expenses. In general, students are not allowed to use per diem on student travel in the BioSciences Department. If you have travel that is funded by a research grant or fellowship that requires per diem travel, you can request an exception to this rule prior to when the travel occurs.

To have an expense reimbursed you must bring an itemized receipt, a credit slip will not be accepted. If you are traveling in the state of Texas and need to stay overnight you must take a Texas hotel occupancy tax exemption certificate and provide it to the hotel. The department staff can provide you with the hotel tax exemption form.
14. **Department Vehicles**

To drive a department vehicle you MUST:

- Fill out a Motor Vehicle Record Check (MVR) form that allows Rice to do an investigative consumer report that would reveal any records concerning any driving, criminal history, credit history, and civil record. A copy of the driver’s license must also be submitted with this form. Submit your documents to Rachael (graduate program administrator) who will send it to the Department of Risk Management.

- Take an online defensive driving course and pass. This course should be funded by your advisor if driving is required for field research or by the department if driving is required for your graduate teaching appointment. Speak to the graduate administrator about registering for the course through Idrivesafely.com.

- If you get in an accident while driving a department vehicle please notify the BioSciences office staff immediately.

15. **Medical or Parental Leave**

Medical leaves and other types of interruptions of study are handled according to the guidelines in the General Announcements (http://ga.rice.edu/). If a graduate student temporarily cannot fulfill the duties of his or her appointment due to a medical emergency or the adoption or birth of a child, the student may be temporarily released from academic responsibilities as described below.

A student may apply for short-term medical or parental release at any time during the semester. The application form can be found in the Graduate and Postdoctoral Studies form library (http://graduate.rice.edu/). Enrollment and stipend support may be continued for up to six weeks or until the appointment expires (whichever occurs first). Graduate and Postdoctoral Studies requests that short-term parental release requests be submitted four weeks prior to the expected start date. Students taking a voluntary short-term release should make arrangements with their advisor and instructors to complete their academic responsibilities in a timely manner.

Students receiving a short-term medical or parental release may also request a 1-semester postponement of graduate program deadlines that occur in the year following the 6-week leave. For example, upon returning to full-time research following the 6-week leave, a student may request a 1-semester delay in an upcoming Science Day presentation, committee meeting, and/or qualifying exam. A student may request deferral of TA responsibilities for one semester. Such requests should be made in writing via email to the graduate program director and copied to the department chair. In subsequent years, the student would be expected to meet standard program deadlines.

We strongly encourage students who are experiencing a medical issue or anticipating the birth or adoption of a child to talk with the director of graduate studies, the department chair, and/or the assistant department chair to discuss the full range of options that may be available.
16. Vacation Policy

Arrangements for holidays and other time off must be made in advance in consultation with the advisor. All vacations must be in compliance with university rules and any guidelines from funding agencies.

17. Procedure for Lab Accidents

Graduate Students classified as a Fellow, Teaching Assistant (TA) and/or Research Assistant (RA) injured in the lab at Rice University are covered under Worker’s compensation. Rice Student Health Center does not provide medical services for workers compensation care. Therefore students injured in the lab should not go to Rice Health Services. The following protocol should be used for all lab injuries.

Emergency

Call Rice University Police Department at 713-348-6000 (X6000, Do not call 911)

• RUPD will dispatch officers to the scene and Rice EMS if needed.
• In case Houston Fire Department trucks or ambulances are needed, RUPD will meet them at the entrance gates and guide vehicles to the location.
• Be sure to tell the RUPD dispatcher of your location, and clearly describe the incident.

If the incident involves chemicals, biological material, or radioactive materials your supervisor or someone in the laboratory should contact Rice Environmental Health and Safety at 713-348-4444.

When injury or illness involves a chemical, the Safety Data Sheet (SDS) should accompany the victim to the hospital. A First Report of Injury Form must be filed with the Director of Risk Management, VP for Administration (MS-670). An Accident/Incident Report must be submitted to your Department head and Environmental Health and Safety. The form is available on the Environmental Safety website at http://safety.rice.edu/

Administer First Aid, if necessary.
Evacuate the area, if necessary.

Non-Emergency

Minor medical injuries/illness occurring in the workplace should be reported immediately to the injured party’s supervisor. The supervisor should fill out a First Report of Injury Form (available from Risk Management http://riskmanagement.rice.edu/ or Environmental Health and Safety http://safety.rice.edu/). Submit this form to either Renee Block at rab@rice.edu or Ana Robledo at arobledo@rice.edu as soon as possible.

If non-emergency medical attention is needed, the student should seek treatment at NOVA Clinic (workers compensation care) located 9563 Main Street. Contact Rice University Risk Management for an appointment. If transportation is not available, a request can be submitted to NOVA to provide transport.
18. Title IX Support

Assault, harassment, discrimination

Rice encourages any student who has experienced an incident of sexual, relationship, or other interpersonal violence, harassment or gender discrimination to seek support. There are many options available both on and off campus for all graduate students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone not affiliated with the university.

Students should be aware when seeking support on campus that most employees are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. The therapists at the Rice Counseling Center and the doctors at Student Health Services are confidential, meaning that Rice will not be informed about the incident if a student discloses to one of these Rice staff members. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

If you are in need of assistance or simply would like to talk to someone, please call Rice Wellbeing and Counseling Center, which includes Title IX Support: (713) 348-3311.

Policies, including Sexual Misconduct Policy and Student Code of Conduct, and more information regarding Title IX can be found at safe.rice.edu.
19. DISPUTE RESOLUTION

Petitions

Students may need to file a petition for an exception to academic requirements, regulations, and decisions for a number of reasons, including personal illness, family illness or death, off-campus externships, etc. Under University guidelines, petitions are to be viewed as “unusual, rather than typical.” Students should address questions about the petition process to the Graduate Student Advisory Committee (GSAC). All appeals of decisions should be made at the lowest possible administrative level above that at which the original decision was made. For example, exceptions to a course requirement would be made to the GSAC. An appeal of a decision made by a dissertation committee, the GSAC, or a member of the EEB faculty would be to the director of the EEB graduate program or to the department chair. Graduate students may petition for exceptions to academic requirements, regulations, and judgements by following the procedures outlined in the Rice General Announcements (http://ga.rice.edu/).

Grievance Process

Problems or conflicts may arise during a student’s graduate education, and students must take responsibility for informing faculty. Depending on the problem, students should feel free to ask for advice from their advisor, members of their progress review committee, the departmental ombudsperson or a member of the grievance committee (see committees in the prologue to this handbook), or any faculty member with whom they feel comfortable. It is best to move to resolve any conflicts quickly and amicably. However, if attempts to resolve a problem informally are unsuccessful, the following grievance procedure should be followed:

1. The student should submit the grievance in writing to the department chair, who will attempt to resolve the problem.
2. If the student remains unsatisfied, the problem should be presented for resolution to the BioSciences graduate grievance committee, a standing departmental committee (see prologue). If a member of this committee also serves as the student’s advisor or on the student’s research progress committee, the student may ask the chair for an alternate pro tem committee member. Both the student and the chair should submit a written record of their view to this committee.
3. If the student remains unsatisfied with the resolution of the issue, the problem should be referred to a standing subcommittee designated at the Graduate Council and composed of three faculty members (representing diverse disciplines within the University), one graduate student, and the dean of graduate studies. A written report of proceedings at stage two should be presented to the Chair of the Graduate Council, for forwarding to the subcommittee, together with all other written materials generated during the investigation. The decision of this subcommittee will be final.
20. Student Requests To Switch Advisors

Because switching advisors will likely affect progress towards the degree and/or financial support arranged by the previous advisor, students should only consider switching advisors in extraordinary circumstances. However, in rare cases a student may feel that his or her interests could be better served by working with a different advisor. Requests to switch advisors will be handled on a case-by-case basis. The EEB graduate program will endeavor to assist the student; however, the student bears the ultimate responsibility of finding a new advisor.

Procedure:

1. The student should first discuss issues with the current advisor and attempt to resolve any concerns or problems.

2. If the student feels that issues are insurmountable, he or she is encouraged to request guidance from the EEB graduate advising committee members, the department ombudsperson, or the department chair.

3. If the student still wishes to switch advisors, the student should speak with a faculty member whose research interests are in line with his or her interests, who is willing to serve as the student's advisor, and who has funding to support the student.

4. If the student finds another faculty member willing to serve as his or her advisor, the student should submit a petition to the department chair for approval of the change. This petition must have the endorsement of the new advisor.

5. If the department chair approves the switch, the EEB graduate program administrator will process the paperwork required to change advisors.

6. If a student changes advisors prior to achieving candidacy, the new advisor and the student may wish to petition the graduate advising committee to request a short delay in the timeline for completion of the admission to candidacy exam.
21. RESOURCES FOR STUDENTS

Center for Written, Oral and Visual Communication (CWOVC)
http://cwovc.rice.edu/; (713) 348-4924
Help with writing papers and dissertations, presentation skills

Center for Teaching Excellence (CTE)
http://cte.rice.edu/; (713) 348-2929
Offers Certificate in Teaching and Learning, TEACH workshops, TA training, a reading group, and various teaching, learning, and technology workshops

Campus resources for students with children
GSA resource compilation for parents (http://gsa.rice.edu/guide-to-grad-life/family-resources/)
Human Resources Child Care Resources Page (http://people.rice.edu/Content.aspx?id=833&libID=854)

Graduate Student Association
http://gsa.rice.edu/
Hosts community-building events and represents graduate student interests to the University administration; provides small short-term loans and bike rentals; housing and other tips for new graduate students; conference travel funding; resource compilation for parents

Office of Graduate and Postdoctoral Studies
http://graduate.rice.edu/; (713) 348-4002
Forms, registration information, time boundaries, thesis guidelines, professional development resources, short-term loans (http://graduate.rice.edu/mosleyadams)

Office of International Students and Scholars (OISS)
http://oiss.rice.edu/; (713) 348-6095
Support for international students, including visa assistance and advice for living in Houston

Rice Counseling Center
http://rcc.rice.edu/home/; (713) 348-4867
Consultation and individual and group mental health counseling for Rice students

Student Health Services
http://health.rice.edu/; (713) 348-4966
Preventive and outpatient medical care for Rice students

Student Wellbeing Office
http://wellbeing.rice.edu/SWO/; (713) 348-3311
Advice for students with wellbeing concerns, including tools for managing conflict and academic challenges

Women’s Resource Center
http://women.rice.edu/
Works to increase awareness of and sensitivity to gender issues
22. Graduate Student Awards

Ecology and Evolutionary Biology Best Thesis Award
2015: Onja Razafindratsima

Ecology and Evolutionary Biology Best Graduate Student Paper
2015: Christopher Dibble
2017: Brad Ochocki

Ecology and Evolutionary Biology Peter Savvas Nelson Award
2015: Patrick Clay
2016: Sreyasi Biswas
2017: Jade Tonos Luciano

Ecology and Evolutionary Biology Outstanding Student Seminar
2015: Brad Ochocki
2016: Shannon Carter
2017: Emily Schultz

Ecology and Evolutionary Biology Joe Davies Prize for Outstanding Service as a Teaching Assistant
2015: Shannon Carter and Eslam Elshahat
2016: Lin-Yi Zhang and Marion Donald
2017: Andrea Drager and Mattheau Comerford

BioSciences Service Award
2015: Kim Gonzalez, Shannon Carter
2016: Brad Ochocki
2017: Amy Prater, Michelle Sneck
23. FORMS APPENDIX
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BioSciences at Rice EEB Program
New Graduate Student Checklist

New graduate students should ensure they complete all of the following steps for successful matriculation into the EEB graduate program.

____ Verify address information on ESTHER

____ Complete and verify the Emergency Notification form on ESTHER

____ Enroll in (or waive) Rice Student Health Insurance by **September 1st**. [www.studenthealthinsurance.rice.edu](http://www.studenthealthinsurance.rice.edu)

____ Obtain ID badge from the Rice Police Department (RUPD)

____ Submit the BioSciences Security Access form to activate ID card for building access

____ Obtain lab keys, if necessary, from Administrative Coordinator in GRB W100

____ Submit I-9 and other payroll paperwork to the Payroll Office

____ Complete **mandatory** online Sexual Harassment Prevention training

____ Complete **mandatory** online Responsible Conduct of Research Training online

____ Complete **mandatory** in-person Laboratory Safety Training

____ Locate lab, faculty, and staff mailboxes in GRB W100

____ Submit code for department copier

____ Register for Fall 2017 courses

____ Complete form to drive Rice vehicles (need valid driver’s license; all students must take an online safe driving course in order to drive Rice vehicles)

____ Purchase parking pass on ESTHER. More information at parking.rice.edu (Optional)
BioSciences at Rice EEB Program - Graduate Student Progress Checklist

During annual progress reviews in December, EEB graduate students will be evaluated on the following criteria:

All Students will have:
- Completed an annual written progress report and submitted to dissertation committee (except 1st year students)
- Had a dissertation committee meeting in past academic year (except 1st year students)
- Presented talk at Grad Science Day
- Regularly attended the BioSciences Monday seminars
- Taken 2 topics courses (e.g. EBIO 561, EBIO 562, EBIO 563, or EBIO 568) before candidacy

1st year students will have:
- Found non-EEB courses to fill any gaps in education/preparation
- Made progress toward selecting a dissertation topic; at least one project should involve the student in the conceptual development of the idea
- Demonstrated familiarity with the literature related to student’s intended dissertation topic
- Considered potential members of dissertation committee
- Begun data collection, OR demonstrated sufficient progress to ensure that they will be able to collect potentially publishable data, no later than the beginning of fall semester of the second year
- Written a draft of the dissertation abstract
- Made attempts to obtain outside funding (e.g., NSF GRFP if eligible)
- Earned a B or better in EBIO 569 Core Course (if offered this year)
- Met with Graduate Student Advising Committee (GSAC)
- Read the EEB Handbook

2nd year students will have:
- Collected data that is potentially publishable
- Formed a dissertation committee including at least 3 EEB faculty and one Rice faculty member outside BioSciences
- A firm dissertation topic and a tentative outline of what the sub-topics will be that will form the chapters of the dissertation
- Made up any coursework deficiencies
- Made attempts to obtain outside funding (e.g., NSF GRFP if eligible)
- Fulfilled teaching requirements or established plans to fulfill requirements
- Earned a B or better in EBIO 569 Core Course (if offered this year but not during student’s first year)

3rd year students will have:
- Collected data that will be publishable in a reputable peer-reviewed journal
- Attended at least one national meeting
- Passed the candidacy exam and filed the formal petition for candidacy through Graduate & Postdoctoral Studies
- Made attempts to obtain outside funding (e.g., NSF or other grants/fellowships)
- A firm dissertation outline with clear descriptions of chapters and a plan that shows how these chapters will translate into publications

4th year students will have:
- Dissertation chapters that are either completed or currently in progress
- Presented at a national meeting
- A time table for the completion of the dissertation and degree
- Have made attempts to obtain outside funding (e.g., NSF or other grants/fellowships)

5th and 6th year students will have:
- Demonstrated they are on track to produce a dissertation with at least 3 first- or sole-authored papers publishable in peer-reviewed journals
- Presented a talk at a national meeting
- Made progress lining up postdoctoral opportunities (whether in academia, agencies, private sector)
- Developed plan for future, post PhD
EEB GRADUATE STUDENT COMMITTEE MEETING

Complete form and return to BioSciences Graduate Program Administrator.

Student name: ________________________

Student’s year in graduate program: ______

Date of committee meeting: _____________________________

Major Advisor

__________________________________________

Signature

Co-Advisor or Committee Member:

__________________________________________

Signature

Committee Member:

__________________________________________

Signature

Committee Member:

__________________________________________

Signature

Committee Member:

__________________________________________

Signature

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Summary/ comments:
BioSciences at Rice

Graduate Student Travel Award Application

*Please include your presentation abstract and CV with this application*

NAME: ______________________________

Student ID#: ________________________  Ext: ________

Name of Conference or other purpose of travel:
_________________________________________________________________________________________________________

Presentation type (Check one): ______________ Poster ______________ Oral

Title:
_________________________________________________________________________________________________________

Location of Conference:
_________________________________________________________________________________________________________

Dates of Travel:
_________________________________________________________________________________________________________

Estimated Personal Out of Pocket Expenses (not being charged to any other fund or account):

Transportation: ______________

Shared _______________________

Lodging: _______________________

Registration: ___________________

Meals: _________________________

Total: _________________________

Source and amount of other meeting travel funds applied for OR received:
_________________________________________________________________________________________________________

Source of matching funds for remaining costs: (research grant, personal funds, department funds)
_________________________________________________________________________________________________________

Faculty Advisor signature: ________________________________  Date Submitted: ________________________________

Department Chair signature: ________________________________
Candidacy for the Doctoral degree cannot be approved until the applicant has completed all course requirements, all qualifying or preliminary examinations or department equivalent, and any foreign language requirements.

1. Name of applicant ____________________________________________________________
   (Last) (First) (M.I.)

2. Department ___________________________________________  Student ID#__________________

3. Attach to this application a current transcript (printed from Esther).

4. Attach to this application a statement of all applicable departmental requirements for both course work and qualifying or preliminary examinations.

5. Attach student’s departmental checklist to candidacy to document how the student has fulfilled departmental requirements.

6. Proposed thesis topic (tentative title) ____________________________________________

7. Thesis Committee, subject to the approval of the GPS. (type or print)
   (a) Thesis Director ____________________________________________________________
       Committee Chair within the department (if different) EEB DOES NOT USE THIS LINE
   (b) Member within the department _____________________________________________
   (c) Member outside the department _____________________________________________
       Additional member(s) _______________________________________________________

8. Signatures:
   ___________________________________________  Date ___________________________
   Original signature of Department Chair or Director of Graduate Studies

   ___________________________________________  Date ___________________________
   Graduate Coordinator signature

   ___________________________________________  Date ___________________________
   Dean of Graduate & Postdoctoral Studies

RETURN TO DEPARTMENT COORDINATOR

A-5
Registration Worksheet for 1st Year EEB Graduate Students

First year students in the Ecology & Evolutionary Biology Graduate Program register for the course EBIO 801 Graduate Research with varying credit hours from 1 hour to 10 hours, depending on their course load. However, the total number of hours for which they register usually does not exceed 15 credit hours. The Department of BioSciences recommends that graduate students enroll in 15 credit hours total each semester, which is equivalent to working 40 – 45 hours per week on courses, scholarly reading, and research. **Graduate students must register for at least 9 credit hours to receive a stipend.**

Students should consult with their research advisor to find out if there are specific courses they recommend, given your research specialization. Students who are taking a heavy load of lecture courses should consider registering for just 1 - 3 credit hours of EBIO 801. If you only have 3 hours of lecture courses, register for 9 - 12 hours of EBIO 801. Remember to register for EBIO 591 in the semester you have a teaching assignment. Here’s an example first year registration that includes common courses – EBIO 569 and EBIO 585 are mandatory, but EBIO 569 may only be offered every other year.

Rice University uses a student database named Esther at esther.rice.edu. The initial login requires you to enter your Student ID and set up a pin (this site is not accessed by your Rice NetID).

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Your research advisor is your first resource if you have additional questions, but you should also feel free to consult the graduate program administrator, particularly for administrative questions or questions about Esther.
EEB Science Day Presentation Checklist

Title
• Clear and appropriate title (should summarize contents of your presentation), author name, affiliation/lab

Introductory Slides
• Forecast: Briefly identify the problem you’re addressing and insight you found
• Outline: Give the structure of the talk you’re about to give
• Motivation and Problem:
  o Why should anyone care about this topic you are presenting? How will your information benefit the audience?
  o Describe the current state of understanding in the field
    ▪ What is known and not yet known
  o Relate your research project to previous literature.
    ▪ How does your work relate to previous work?
    ▪ How does your work advance (add to) the field?
  o Are there wider/broader implications of your work for science or society?
  o What is your specific hypothesis or research objectives/goals?

Methods, Design, Analysis
• Heading or other indication that experimental methods are now being presented
• Introduce study system and relevant biology/ecology of you study organism/population/community
• Explain overall methodological approach
• Explain analytical methodology and statistical methods
• Convey appropriateness of methods to achieving stated study objectives or goals

Results
• Heading or other indication that you research results are now being presented.
• Focus on key results and key insights.
• All figures should be clear and readable
• Figure contents (e.g. axes, symbols, scales) and patterns (e.g. trends, relationships, statistical outcomes) are explained thoroughly
• Avoid large tables; utilize clear figures

Conclusion
• Summarize main points
  o Interpret the results in the context of the story laid out in the Introductory slides
• Do these results solve the problem presented in the introductory slides?
• Offer next steps or future work generated by the presented research
• Final slide with take home points
• Acknowledgements (funding sources, advisor/collaborators, field or lab assistants, others who helped make your work possible).

Sources:
http://pages.cs.wisc.edu/~markhill/conference-talk.html#interview
Dr. Mary Purugganan – BIOC 583 seminar on presenting seminars, Feb. 6, 2017.
http://www.northwestern.edu/climb/resources/oral-communication-skills/creating-presentation-body.html
Research Presentation Tips – the art of a truly great seminar
Compiled and edited by Josh Tewksbury...

The following document was prepared by soliciting feedback from a wide range of faculty at R1 research institutions. I am an ecologist, but consistent advice came from colleagues in a wide range of fields. I have edited the advice only slightly, and organized it into main themes.

Two principles and a rule of thumb to begin. First, every talk is a job talk. Unless you never see yourself moving, then every time you talk about your work, you are giving a talk that could lead you to the next job. Job opportunities have been lost because of sloppy "informal" talks in which chairs or search committee members were unimpressed. Second, the research seminar is almost always the most important aspect of an actual interview.

You learn to give a good seminar the same way you get to Carnegie Hall – practice, practice, practice. Get critical, constructive feedback on several iterations of your talk before any high-stakes event. A good rule of thumb for any high stakes talk – give yourself a minimum of 40 hours of work time to build the talk and hone it to perfection. The difference between a competent talk and an exceptional talk is that last 20 hours of practice AFTER you think the talk is "in good shape”.

I have organized this into 5 sections – I. the art of preparing the talk (9 commandments for building a truly great research seminar), II. the art of giving the talk (12 tips focused on the delivery of a great talk), III. a bundle of tips for making clear slides, IV a quick hit list to check if you are truly ready to give you talk, and V. a small number of resources (we can add more during the seminar).

I. The Art of Preparing the Talk

1) Provide a narrative: the art of clarity and mystery

- Care about story telling and narrative structure. The best seminars are good stories and like all good narratives they have an interesting and engaging plot. They keep the listener at the edge of their seat. The art of a good narrative is to combine predictability and surprise. Tell your audience what the story will be about (this is what "organizing slides" are about) but have a plot with surprises and interesting turns. The art of a good narrative comes from either being an innately good story-teller, or from reading good fiction (Poe, Hemingway, some of the good pulp and mystery writers such as Elmore Leonard are great models). It does not hurt to make an outline of your plot rather than just putting a bunch of slides together. Posing mysteries/questions is a ploy that can be used to great dramatic effect.

- use a story-telling technique other than chronological - "first i did this, then i did this, then i did that" is, well, boring. extra points for creating a suspenseful story. two story-lines i use regularly use:
o 2x4 from the left - leading your audience in one direction, with the implicit expectation of a certain result or outcome, dashing their expectations (the 2x4), using that research "disaster" to realize some greater pattern, outcome or underlying fundamental truth (this structure works well for a series of experiments with early "failures" leading to a divergent path and final success)

o baptist preacher - start high, bring low, end high. works really well for conservation talks where the end message mixes scientific outcomes with a larger social/societal message of interaction/responsibility/ etc.

• Science is a detective story. Tell it like one. State hypotheses explicitly, with at least two strong, plausible alternatives so that nobody can figure out in advance what your results will be. Highlight the unexpected and the counterintuitive results. Play up any clever insights that let you solve the problem, or any exceptionally large datasets and analytical savvy that let you do what nobody else has been able to do before. Science is (or at least should be) a CREATIVE enterprise, not just a slog.

2) Provide context and structure

• Care about didactics. When you give a lecture you are both an entertainer and a teacher. Audience members should go out knowing something new and having learned how to explain it in a couple of pithy sentences. The best talks are those in which people leave saying “I didn’t know that! Man, feather lice are so cool!” Do not be embarrassed about giving all the background/context needed for the talk to be understood and for its importance to be appreciated. What is obvious to you might not be to the rest of the audience. Ecologists will welcome a refresher on how G proteins work and physiologists will thank you if you explain how the neutral theory works and why it matters.

• Why is your research important to science? What are the big questions you’re addressing? Why is your system BY FAR the best way to get at these questions? Context and relevance are EVERYTHING for the majority of the audience.

• Avoid assuming your audience knows as much about the nitty gritty as you do. If you start a talk with a statement like "You probably all know the importance of the corticosteroid hormones for..." well, then you’ve lost (and perhaps alienated) those in your audience that don’t (which at the very least, will be graduate students - also see point 3 above: what to do).

• Start with saying what you are going to say. It could be an outline of the talk or even some of the major conclusions right up front. People want to know within less than 5 min what the point is going to be and whether they are in the right lecture. Only after this brief statement, begin an introduction of the general area of this work and why it is interesting. After an introduction, you have your observations, and towards the end, summarize all over again. Include broader implications. Don’t forget this last section on implications, else people may go away wondering, "so what?"

• Have a clear overarching question that you start with, flesh out, and return to (i.e. say what you will say, say it, remind people what you said). The bricks are the
excellent results and data you have garnered, but without the mortar, no one will understand their significance. Outlines, schematics with parts highlighted, etc, are great for this.

- Have a good conceptual framework explaining what you like in Biology (or whatever field...). Usually only a small fraction of the audience will really get the details of what you do. They need to hear and see (with a schematic) what the big picture is. This is usually three topics, like “behavior, physiology, and environment” or “modeling, field observations, and manipulations”. It really can be anything...but often this is the ONLY thing that the majority of the audience will take away about the candidate. It gives people an idea of what you would do for 30 years, and how you would fit into that department.

3) Keep it simple

- Bad seminars frequently try to pack far too much into the time slot. My gut tells me that you can hit only 2-3 pieces of the big picture story in any seminar.

- In any talk you will have some goal--a few points to make. Organize the talk to maximize the clarity of these points. Throughout focus on items that lead you to these specific goals and reject tempting tidbits that don't aid in getting there.

4) Care deeply about representation, from graphics, to art to font

- Slides must be clear but in great seminars they are beautiful. Spending time making beautiful images that are didactical and clear separates the good/competent talks from the excellent ones. What we do, the creatures and systems that we study, are so damn beautiful that there is no justification for esthetically sterile talks.

- No slides where ANYTHING is unreadable or hard to interpret. How many times have you heard a slide introduced like this: "I know you can't read this in the back of the room, but ..." "These colors didn't show up as well as I thought, but ..." "This is a very busy figure so I'll walk you through it ..." "I know this slide is a little dark, but trust me -- this little smudge is really important ..." "There are no labels on these axes, but they are ..." IF YOU HAVE TO APOLOGIZE FOR A SLIDE IT IS NOT WORTH SHOWING.

- Clear and beautiful figures that are clearly explained. What is the x-axis? What is the y axis? What pattern (trend line, colors, differences, no relationship, etc) do you want people to see in the figure? Only after explaining all that will people really understand the significance (which you should also tell them).

5) Cut text, then cut more text, then remove even more text.

- No text-only slides. EVER. Images should be compelling, clear, and large enough for the old timers in the audience.

- Use PowerPoint as an image projector, not a presentation crutch. That means minimal text, rarely if ever in bullet point form, always large font.
• Use as few words as possible. Avoid long lists of anything. People can't retain them. If you have to say, "I know you can't read this but....," you have too much material on your slide.
• Make sure that you'll talk about everything on each slide. Otherwise, remove unneeded figures or panels.
• Minimize text on slides - put only enough text on the slide to remind yourself of what you need to say, or very very strategically to remind the audience of some key concept or number that they need to remember as the story rolls out. And if you can remind yourself what you need to say with just a photograph or a graph, even better. This produces a more professional slide set that seems a little more 'mature', and it draw the audience into the speaker's story rather than reading slides.

6) Know and care about your audience

• Know your audience. The first 10 minutes and last 10 minutes (at least) must be accessible to EVERYONE in the audience. I have never, EVER heard anyone complain that a speaker spent too much time on introducing the subject and putting it in context.
• Know your audience. A seminar to a biology department is different than a seminar to a cell biology or ecology/evolution department.
• Know the audience. It's crucial to gauge the level appropriately. If you know key people in the field will be in the audience, make sure that you cite their work appropriately, but not gratuitously. Also, don’t confuse appealing to a broad audience with "dumbing down" - colleagues (including undergraduates through senior faculty) from other disciplines or sub-disciplines are not stupid, even if they aren’t up on the latest bayesian technique,
• For the job seminar, talk briefly in a very genuine way about your fit to the department. This is not an idle shout out to all the professors you might have something in common with. Instead, this takes researching the departmental resources and understanding how you could both use and contribute to them.
• For the job seminar, use the last 5-10 min. to talk about what you would do in your new lab. This could even have potential specific aims for a grant. Consider what experiments your first rotation or grad student or undergrad(s) would do in the lab.

7) Be clear about YOUR research

• Be very clear what YOU, PERSONALLY have contributed to the science. Own the work. Don't say "I'm a postdoc in the xx lab and we study....". This is especially important if you’re coming out of a big lab. Some tips:
  o Use your acknowledgements well. Be classy, complete, and quick. This is one of the only times in your seminar when you will put text and information

1 Beware: This latter use of text is where speakers go horribly wrong, thinking the audience needs to remember dozens of full sentences and big bulleted lists.
on a slide that you will not talk about. List funding, list advisors and lab-
mates, list collaborators. Don’t call them all out by name.

- List published works under relevant results, so folks know what is published.

8) **Reduce the number of slides and the number of transitions**

- The exact number depends a lot on how you use them, but you will almost always have too many.

- Up to 35 slides for a 45-minute talk might be possible. More than that, especially if many have data, is just overload. For a 15 min talk, 10 slides seems the upper limit. You may be able to get through more, but the audience will not. You want them to come away satisfied rather than frustrated. Boil down the message to the essentials.

- Avoid data diarrhea: Sometimes your story has lots of data you are very proud of. One approach is to show the audience how you carefully analyze one or two points using the raw data. Do this until the audience recognizes that you think well and trusts that you are satisfying rigorous criteria. Then say that you investigated the five other points with similar methods, care, and scrutiny, but since there isn't time to show each of the individual experiments, you will just be stating the results. This way, you have illustrated how to do it well with details and yet not dragged the audience through too many details.

9) **The E’s of life, in 15-minute packets, and with clarity**

- Giving talks as all practices is about all these E’s of life, isn’t it: Empathy, Ethics, Esthetics, and Etiquette ...

- Any talk over 15 minutes is longer than our brain’s attention span, so break up your talk into 15 minute pieces and then pause for a minute of so between each one so that people can rest.

- get over the need to show your disciplinary colleagues you speak the jargon and can "out-math" them - live in fear of a resurgence of buzzword bingo, and strive to make your work understandable and relevant to the broadest audience

II. **The Art of Giving the Talk:**

1) **Stay on Time**

- Stay on time, and under the full amount of time allotted. Make sure to allow time for questions, e.g. if it’s a 50 min time slot, aim for 40 min - I think it’s pro when I see a speaker clock in around 40-42 min, treating the seminar as a time for a collegial exchange of ideas rather than just a show about themselves. It shows both confidence and openness.

- Finish on time to leave room for questions. Nobody every complained about a seminar that was TOO SHORT.

2) **Slow down**
• Avoid talking too fast, not looking at your audience and reading from notes. If you are not engaged in your audience because you are nervous they will check out. Learn to work with your nervousness.

• Speaking faster to say more does not improve a talk. Give yourself time to make points clearly and for the audience to think while you are talking. Leave the slide you are talking about up until you have finished making any points about it. It is easy to make the mistake of flipping to the next slide while still finishing your statements about the previous one.

3) Connect with individuals

• Care about your audience. Respect and pay attention to those in front of you. Engage them. This takes place at, at least, two time scales. Get to know your audience before giving the talk and prepare a suitable one. It is deadly to give a seminar full of ecological/neuroscience/molecular jargon to a general biology department (or worse, to a general lay audience). It is also bad to give too general a talk to a specialized audience. The second time scale is while delivering the talk. Paying attention to your audience is key. Are they engaged? Is it time to crack a joke or do something vaguely outrageous to bring them back into the fold? It is often nice to engage the audience at a personal level. There all sorts of ways of doing this... (e.g. involve someone in the audience as an element of the talk. “Josh, what do you think. Does this graph make sense?” Make eye contact and ask questions to the audience “Have you all watched the director’s cut of Bladerunner?”. Make frequent eye contact to see if you are keeping the audience with you. There will always be someone snoozing ... Do not freak out.

• No matter how many people are in the audience, talk to them as if you are in the hallway with a single colleague and are in a conversation. positive, intense, focussed. LOOK at people - stare straight at them as you make your points. connect! get out from behind the lectern/podium and move towards the audience. people will stay awake, and stay involved if you are looking/talking directly at/to them. This means be prepared and bring your own equipment (see #11).

• Especially if you're on a job talk and you've had a chance to meet/talk with folks before your seminar - include points raised in those conversations in a causal way, and name them without being overly pandering. connect to your audience.

4) Consider the power of the spoken word, and the power of silence

• Channel David Attenborough, Oprah, and Carl Sagan. Don’t rush. Emphasize individual words/points. Use silence to allow a visual point, or a spoken point, to sink in. Allow yourself to use a broader vocabulary than is customary in science. Cement your messages with metaphor...

5) Vary your pace, vary your voice and convey excitement

• You’re not 'giving a seminar', you’re not nervous. You’re just talking science with some colleagues, and there’s nothing else you’d rather be doing.
• Let your voice communicate your excitement about your science. If you don’t care, why should I?

• Vary from detail to generalization. After a dense part, say something lighter...after a few graphs, have a colored picture of your preparation or of a model or of anatomy... Try to make it fun as well as interesting. Eventually public speaking will be a pleasure for you as well because one can enjoy communicating technical ideas in a clear and effective manner. Your enjoyment will be evident and will help audience enjoyment. And practice a punchy last sentence or two so you don’t end with, "Well I guess that’s all I have to say."

6) Recognize that many people do not hear as well as you

• A significant number of older people hear poorly, and many speakers’ voices tend to disappear toward the end of sentences. They have a nice strong voice, but in mid sentence it goes into a gravely lower register and fades as perhaps they are running out of breath. The sentence ends like a casual parenthetical whisper that can’t be heard. I suggest trying to catch yourself doing that and developing a more consistent audible tone to the end of the sentence. Keep the voice up all the way through. Pause and take a breath instead of squeezing more out. Despite this, variations in voice are good ways to catch attention. For that you can go loud for emphasis but not soft.

• Many people in your audience will not be native English speakers. Try to use simple, widely understood words, allusions, and humor rather than local idioms, however trendy. Talks have an implied formality. Consider that you are on show and are the leader of an intellectual experience.

• Your talk is accessible only if it can be heard and understood. In each room, try to estimate how loudly you need to speak to reach the back row. If you are not confident of being heard, use the microphone when available. The microphone helps only if you remain near it and speak towards it. Experiment a bit before the talk starts.

7) Don’t apologize and make statements

• Avoid being self-deprecating. Don’t put yourself down (saying things like "I know this pattern isn’t strong but..." or using too many caveats like "This may mean"). Be confident (without being annoyingly cocky). Never apologize for anything in a job talk.

• Try very hard to make statements about what you see rather than say them as questions (because your voice goes up at the end of a question, reducing its impact).

8) Start and end strong

• Consider starting, or ending, your talk extemporaneously with the lights up. force the audience to look at you, and to follow your words. it takes a bit of guts, but it also connects the audience to you, instead of to your images.

• Know your first and last sentences cold. So, "Thank you for inviting me to...." (also know your first scientific sentence). If you mumble through the first few minutes,
you're toast. You should also be able to end your seminar gracefully. 'That's all folks' is great for Bugs Bunny, but not for a seminar.

9) In the question and answer session

- Don't interrupt questioners.
- For aggressive questions, always answer the substance, never answer the tone.
- Don't make your answer to a question too long.

10) Make peace with the pointer(s) – point it, don't circle or draw with it.

- Use the pointer to indicate the data you are describing. Move it slowly to guide movement of the eyes to exactly what you are now talking about.
- Don't wave it rapidly or in circles to call attention to an area. The observer gets dizzy and can't see through all the visual interference you are creating. I just close my eyes when that happens. Point and hold.
- Always bring your own pointer to a job talk

11) Always prepare for the unexpected

- Try your talk on different platforms (PC, Mac) and projectors. Prepare for something to fail (e.g., an embedded movie). Bring a backup of your talk on a flash drive, and put a copy on the web where you can retrieve it anywhere that there's web access. Shit happens.
- Bring a second laser pointer to every talk. Laser pointer batteries run down often in a lecture. The batteries have very little capacity. You can see the pointer light better than the audience. If the light starts looking dim to you, the audience will not see it; switch to an old fashioned stick or pull out your other pointer.
- Bring your own USB remote, so you can walk around the room.
- Assume your computer will die en-route, so always carry backups (jump drive, CD) of your presentation and have a copy in dropbox that you can access from a distance, if needed.
- Check your images on a data-projector, not just on your computer. Data projectors often alter colors and brightness.
- If you have multimedia (sound, video), check, practice, verify, have alternate solutions. Even if problems that arise are not your fault, some will see them as your fault. If problems do arise (with any part of your talk) never apologize. Just move on. Never point out misspellings that you suddenly see during your presentation. Stiff upper lip. Fix the error immediately afterwards.
- Show up early to test your setup. Remind your host about knowing how to access technical help, in the event of a glitch.
- If you are going to a meeting and need to upload your presentation onto a session computer, check for Mac-PC incompatibility, preferably before you go. Have a .pdf
version as a backup -- that should work on any computer, but you’ll lose any animations.

III. A bundle of tips for building a clear slide

- **Titles:** Use a simple declarative/informative brief title at top of EACH slide. Not "Effects of A" but "A Blocks B" or "A is Inactive" or "A activates B." This will help those who doze or looked down or jotted a note when you first said what the slide was.

- **Size of lettering.** 20 to 35 point in PowerPoint! Everyone makes them too small. 18 points is the lowest you can go for a label. The larger size is for titles. A convenient rule of thumb is that the lowercase letters of any label need to be 1/40 of the size of the picture at least--you can measure this during practice projection. This goes for the numbers labeling tic marks on graphs and the indication of their units too. Don’t be embarrassed to use large letters. Look at any billboard. No printed figure labeled for publication has letters big enough for a projected slide made from the same picture. Re-letter figures from the literature to meet this requirement. You can erase the old letters in Photoshop and relabel in PPT, or cover the old letters with new ones in a white box. To make a test, project something in the auditorium and go to the very BACK of the room and ask if it is clear. Can you really read the smallest letter? Similarly a transparency made with the 12-point type that we would consider generous for a printed document is not visible on projection.

- **Lines:** Often you will import graphs from another program. Either in PPT or in the original program, make the axis thickness and symbol sizes adequate. A 1 point line thickness does not show. If you import graphs and then shrink them on the PPT page, letters, lines, and symbols will become smaller.

- **Colors:** Colors are great but try also to have contrasting brightness. Objects differing in color but not brightness are hard to see. Contrast is paramount. Textured backgrounds just make it hard to see the stuff you are presenting. They obscure your message. Dark reds and blues are brilliant on the computer screen but disappear if put on a black background. Dark reds are fine against white. Yellow disappears against a white background.

- **Consistency and continuity:** Movies have a continuity editor who makes sure that the cars stay the same color from scene to scene and people wear the same clothes coming out of the door as they did going into it. Similarly, you can try to keep the same color/symbol/thickness for control data versus that for test data. In diagrams, represent the same object the same way each time.

- **Transitions:** use av to supplement your message, not provide the main entertainment. zooming slides, too many animations, lots of videos, etc. etc. the audience should remember YOU first, your message/science second, and your av third.
IV. You know when you are ready when...

- You know what is on the next slide without having to think, and you can transition easily from one slide to the next
- You have eliminated all the text “crutches” from your talk
- You know what part you would cut if your talk is running too long and you are able to cut it on the fly without a pause\(^2\)
- You are comfortable explaining all of your material and working with the audience directly

V. Resources

- Watch ‘power poses’: [http://poptech.org/podcasts/amy_cuddy_power_poses](http://poptech.org/podcasts/amy_cuddy_power_poses)
- Garr Reynolds’ blog Presentation Zen is pretty good if you can get past the self-promo and wise sage schtick. [http://www.presentationzen.com/](http://www.presentationzen.com/)
- Watch, and re-watch some fantastic seminars. There are plenty to choose! Here is one, for example. [http://128.208.114.46/seminars/02-08-12/index.html](http://128.208.114.46/seminars/02-08-12/index.html)

\(^2\) It is excruciating when a speaker says 'I should skip this since I don’t have time', and then they end up talking a long time about it anyway (And this is where having less text on the slides useful because it's way less obvious if you're skipping something...)
Qualifying Exam Evaluation
Ecology & Evolutionary Biology Graduate Program, BioSciences Dept., Rice University

Student: ___________________________ Date of exam: ______________________________

Please review guidelines for evaluation on reverse and provide comments as needed
(comments required for “unsatisfactory” components)

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**Summary evaluation**

I have read this exam, and recommend: □ pass qualifying exam

□ conditional pass (see comments above and in summary document from committee chair)

□ fail qualifying exam

Committee member: ___________________________ ___________________________

signature
# Guidelines for Evaluation of EEB Qualifying Exam

## Specific Aims
- **Excellent:** Each aim is a logical test of the hypothesis or has clear rationale at its foundation. Hypotheses are soundly based predictions of biological importance and address scientific concepts rather than experimental outcomes.
- **Satisfactory:** Aims are clearly stated; a case is made for the work's rationale.
- **Unsatisfactory:** Aims are not clearly stated; little context or justification is provided.

## Background and Significance
- **Excellent:** Identifies all relevant results and techniques from the literature, and synthesizes them in a thoughtful discussion.
- **Satisfactory:** Discusses major previous works and places them in context for the present project.
- **Unsatisfactory:** Fails to cite or assimilate previous work.

## Preliminary Results
- **Excellent:** Extensive preliminary results with thoughtful discussion.
- **Satisfactory:** Some preliminary results that are adequately described.
- **Unsatisfactory:** Limited preliminary results or low quality of discussion.

## Research Plan
- **Excellent:** Research plan would be competitive for funding with clear rationales, experimental plans, controls, interpretation of expected results, and alternative approaches.
- **Satisfactory:** Research plan clear; experiments are technically sound and feasible.
- **Unsatisfactory:** Research plan unclear, lacks description of controls or rationale, or includes inappropriate level of detail.

## Novelty
- **Excellent:** Original research that demonstrates distinct creativity in the question or experimental design.
- **Satisfactory:** Describes a novel problem appropriate for a Ph.D.
- **Unsatisfactory:** Incremental approach unlikely to yield publishable findings.

## Document text
- **Excellent:** Good organization, fluent prose, and few grammatical errors; full compliance with formatting guidelines.
- **Satisfactory:** Decent organization, coherent prose, and limited grammatical errors; full compliance with formatting guidelines.
- **Unsatisfactory:** Poor organization, incoherent prose, and/or numerous grammatical errors; not in compliance with formatting guidelines.

## Presentation
- **Excellent:** Engaging, highly polished presentation with well crafted slides that illustrate key results in the project and clearly describe future directions.
- **Satisfactory:** Professional presentation on par with a solid conference talk; includes a coherent project narrative and future plans.
- **Unsatisfactory:** Too much or too little detail; unclear about project goals and direction; incoherent or illegible slides; read from slides.

## Replies to questions
- **Excellent:** Complete answers that demonstrate a deep understanding of the discipline that extends beyond the contents of the document.
- **Satisfactory:** Competent answers that illustrate a facility with the issues and techniques immediately relevant to the thesis project.
- **Unsatisfactory:** Answers reveal a limited familiarity with the thesis project or its context.
**Graduate Thesis Evaluation**

*Ecology & Evolutionary Biology Graduate Program, BioSciences Department, Rice University*

(To be completed by all committee members as part of our graduate program assessment)

Student: ___________________________  Date of defense: ________________

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Committee member: ___________________________  ___________________________

signature
### Guidelines for Evaluation of EEB Graduate Thesis

<table>
<thead>
<tr>
<th>Section</th>
<th>Excellent</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
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<tbody>
<tr>
<td><strong>Background and Significance</strong></td>
<td>Identifies all relevant results and techniques from the literature, and synthesizes them in a thoughtful discussion</td>
<td>Discusses major previous works and places them in context for the present project</td>
<td>Fails to cite or assimilate previous work</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Extensive published or publishable results with thoughtful discussion</td>
<td>Some published or publishable findings that are adequately described</td>
<td>Limited or unpublishable results or low quality of discussion</td>
</tr>
<tr>
<td><strong>Problem solving and critical thinking skills</strong></td>
<td>Demonstrates a deep understanding of the discipline that extends beyond the contents of the document</td>
<td>Competent answers that illustrate a facility with the issues and techniques immediately relevant to the thesis project</td>
<td>Answers reveal a limited familiarity with the thesis project or its context</td>
</tr>
<tr>
<td><strong>Thesis text</strong></td>
<td>Good organization, fluent prose, and few grammatical errors; full compliance with formatting guidelines</td>
<td>Decent organization, coherent prose, and limited grammatical errors; full compliance with formatting guidelines</td>
<td>Poor organization, incoherent prose, and/or numerous grammatical errors; not in compliance with formatting guidelines</td>
</tr>
<tr>
<td><strong>Oral presentation</strong></td>
<td>Engaging, highly polished presentation with well crafted slides that illustrate key results in the project and clearly describe wider implications</td>
<td>Professional presentation on par with a solid conference talk; includes a coherent project narrative</td>
<td>Too much or too little detail; unclear about project goals and direction; incoherent or illegible slides; read from slides</td>
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Recognize and Avoid Plagiarism; Cite Sources

Plagiarism is the use of someone else’s ideas, results, equipment design, visuals, wording, or even sentence structure as if they were your own. You may state the information provided by others but only if you use your own words and cite the source of the information. Alternatively, you may use the words of others but only if you use quotation marks and appropriate citation. Changing a few words per sentence is not acceptable; it is plagiarism.

Plagiarism can be intentional if you knowingly:
- Copy something word for word without using quotation marks, even though you cite the source;
- Use all or part of a visual without crediting the source;
- Steal someone’s ideas and state them (written or orally) as if there were your own without crediting the source.

Or it can be accidental if:
- You don’t realize what is considered plagiarism in the United States;
- When you took notes, you didn’t put exact wording in quotation marks and now you plagiarize without realizing it;
- You mistakenly think that everything on the Internet is free use.

Why is it important to avoid plagiarism?
In the United States, plagiarism is considered academic misconduct, and you are expected to avoid plagiarism, either intentional or accidental. Plagiarized work can result in a failing course grade, expulsion, rejection of a paper submitted for publication, denial of an advanced degree, or loss of job. It is an increasingly serious matter now that the Internet has made plagiarism easier than ever before. Rice University has an Honor Code, which you must follow; journals are becoming increasingly explicit about the need to avoid plagiarism.

How can you avoid plagiarizing?
1. For each source you read, keep electronic notes. You might want to use the Template for Taking Notes, which can be downloaded from the Engineering Web site, link Thesis Writing Seminar: www.engr.rice.edu. As you enter the information, proofread for completeness and accuracy. As you take notes, put quotation marks around any wording that you copy directly from the source so that later you can put it into your own words and won’t accidentally plagiarize.
2. If you copy something word for word, put quotation marks around it and cite it: (Jones 2008). If you paraphrase by putting ideas into your own words, cite the source of the ideas: (Jones 2008). If you copy a figure or table, cite it at the end of the caption and inside the period: (Jones 2008). If you adapt a figure or table or use only part of it, cite it at the end of the caption: (Adapted from Jones 2005). Put the complete bibliographic reference for all citations in the Bibliography (or Works Cited).
3. Practice paraphrasing (putting someone else’s ideas into your own words) because it’s often difficult to do. Avoid the temptation of paraphrasing too many details. Focus on the main idea or evidence that you need to cite. Once you have determined what you need to paraphrase, reread the source and then cover it up.
Write the main idea from memory and then check to verify that you haven’t used exact wording or sentence structure. Simply changing the verb tense or substituting one adverb for another, but leaving the sentence structure essentially the same, is still considered to be plagiarism. Using the same technical terms or words widely used in your field is acceptable because there are probably no accurate substitutes.

4. If you simply cannot figure out a different way of saying it, use quotation marks to indicate that you are quoting exactly. [Because few writers in science or engineering use quotations, generally preferring paraphrases, paraphrasing is a skill you must learn. In contrast, writers in the humanities often use quotations to illustrate key points, but they also paraphrase when exact wording is not essential.]

5. Always cite your source, whether for text, visuals, or ideas. If you cannot remember the source, you can’t use the information. Put citations in as you write your first draft so that you don’t have to go back later when identifying the source may be difficult.

6. In your text, make clear what the source is. Generally, it is a good idea to identify an author by name rather than by referring to a number in your bibliography, though this practice varies somewhat by field or by journal. In any case, try not use a reference number as a part of speech. Do not, for example, write that “[10] gives more compelling evidence than [98] provides.” Think of how time consuming it is for a reader to have to keep flipping to the bibliography to see who has said what. It would be preferable to write “Johnson (10) gives more compelling evidence than Dickerson et al. (98) provide.” And then move to the evidence, clearly identifying the references as you discuss the evidence each author gives. Whether you use square brackets or parentheses depends on the field or journal. Generally [ ] are used when the citations are listed numerically rather than alphabetically in the Works Cited section of your paper,

Examples of Citation within the Text
CONFUSING: [10] and [15] were the next to apply this algorithm to new genetic sequences.
CONFUSING: The first big improvement came in the work of [10].
CLEAR: Koninsky et al. and Rebert et al. were the next to apply this algorithm to new genetic sequences (10, 15).
CLEAR: Koninsky et al. (10) and Rebert et al. (15) were the next to apply this algorithm to new genetic sequences.
CLEAR: Smith and Wesson (2001) were the next to apply this algorithm to new genetic sequences.
CLEAR: Research teams then began to apply this algorithm to new genetic sequences (Smith and Wesson 2001).
CLEAR: Research teams then began to apply this algorithm to new genetic sequences. (See, for example, Smith and Wesson 2007 and Rebert et al. 2009.)
RIGHT, but LESS CLEAR: Research teams then began to apply this algorithm to new genetic sequences. (See, e.g., 10, 15, 22, and 54.)
For suggestions on how to avoid plagiarism and cite information, see Diana Hacker’s The Bedford Handbook, 7th ed. (Revised 2009) or the 2009 8th edition. She includes extensive examples of APA and Chicago style guides. I suggest, too, that you check the Web Site for the book: www.dianahacker.com/bedhandbook for further information. Or go to other Web sources for the APA Citation Style Guide or the Chicago Manual of Style Citation Guide. Journal Style Guides also give examples.

Examples of Plagiarizing and Paraphrasing

The original text
“The new Internet economy has brought about the development of competing search engine companies, each with its own proprietary software. Sites are collected and updated differently. After a search is conducted, one search engine provides exactly what’s required within the first ten hits whereas another is useless. Frequently there is tremendous overlap, although no two search engines are exactly alike. Since the outcome varies from search engine to search engine, researchers often find it necessary to use several engines for the same question for either the best or more comprehensive results.”

Read the following student-written examples and decide if each is paraphrasing or plagiarism.

1. Burnett points out that competing search engine companies have proprietary software that collects and updates sites differently. As a result, one will provide what you want within the first ten hits, while another is useless. That means that researchers will frequently need to use several engines to obtain the best or more comprehensive answers (2001).

2. Multiple search engines on the Internet have arisen, each with unique strengths and weaknesses. These differences derive from each engine’s respective method of analyzing and classifying information on the Internet. As a direct result of these differences, more exhaustive search results are often obtained through the use of several engines (Burnett 2001).

3. When researching a specific subject on the Internet, the use of multiple search engines is essential for a thorough search because each search engine utilizes different algorithms.

4. Rebecca Burnett suggests that we use several search engines because sometimes there is tremendous overlap in results and the outcome differs from search engine to search engine (2001).
Analysis of the four responses

1. Even though the author’s name and date are cited, this is clearly plagiarism. Changing the verb from passive to active (“are collected and updated differently” becomes “collects and updates differently”) is not sufficient change. Substituting “while” for “whereas” in “within the first ten hits …another is useless” again is not sufficient change. Some exact wording is retained; sentence structure is identical. The same objections hold for “to use several engines….the best or more comprehensive answers.”

Some students have tried to argue that the information in the original paragraph is now common knowledge and that, as a result, some use of the exact wording is inevitable. I agree, to a certain extent. I wouldn’t be surprised if “proprietary software” occurs to many writers as a phrase. But example #1 relies far too heavily on simple substitution while retaining sentence structure and whole blocks of words.

2. This is a fine paraphrase. The source is cited and the only duplicate wording occurs in “several engines,” a phrase that I would agree is in common use and therefore is not plagiarism.

3. This is an acceptable paraphrase, but the source is not cited. So it is plagiarism!

4. Because this is so short, you might be tempted to call it a paraphrase. But “tremendous overlap” is identical, and “the outcome differs from search engine to search engine” changes only “varies” to “differs” and leaves the rest of the wording and structure the same. It is plagiarism.

Frequently asked questions

1. When don’t I have to cite the source for information?
   You don’t have to cite basic knowledge that is found in two or more textbooks. But neither can you use it word for word—you must paraphrase. The exception would be something like a common definition, formula or algorithm; those you may use as they appear in the source.

2. What if I’m using a common method that’s difficult to reword? Do I have to cite the source?
   If you use it word for word rather than paraphrasing it, you must cite the source. I know of an Assistant Professor who was denied tenure for taking a method word for word from a published paper. If the method is widely used, consider referring the reader to a published paper for the method; then note any changes you make.

3. How do I cite a source that I read about in a different article, a review article, for example?
   You will have to cite the source as well as the review article. It’s always best to get a copy of the original article instead of relying on what someone else says about it, however. Reviewers are not equally good, and even a good reviewer may be focusing on different aspects of the article than you need. The exception would be an article originally published in a language you can’t read or an article
that is no longer available. In such cases you must make clear that it is the
reviewer’s interpretation that you are citing.

4. What do I put in the Bibliography or Works Cited?
   Everything you cited and nothing that you didn’t cite.

5. What should I do if I have an important quotation or a really relevant figure,
   but I can’t remember where I found it?
   See if you can track it down via the Internet. If you can’t find it, you can’t use it.

6. Can I cite my own previously published paper or my thesis?
   Of course! But first read the contract you signed with the journal. Some journals
   give you permission in the contract to use your paper in a thesis. In other cases,
   you must contact the journal to get permission for use. You do not have to get
   permission from the other authors listed on your paper, however, because all the
   authors have equal copyright ownership. Each of you can cite the paper. If you
   were first author and are now using essentially the entire paper as a chapter in
   your Master’s or PhD thesis, make clear at the outset of the chapter that it comes
   largely from your paper (cite it clearly!). Then later in the chapter make it
   absolutely clear that the chapter is based on your paper. If you use any figures or
   tables from the published paper, cite those as well. If you are using your thesis as
   the basis for a paper, make that clear, too. You can cite it as an unpublished thesis
   or dissertation.

7. When do I have to get permission to quote or paraphrase someone else’s
   work?
   In the academic world, this is sometimes a gray area. You usually don’t have to
   get permission for use if you are writing a paper for a class, a Master’s thesis, or a
   PhD dissertation, though you must cite the source. And because being cited helps
   faculty receive tenure or academic awards, most researchers are delighted to be
   cited in academic journals. However, journals increasingly have guidelines that
   forbid plagiarism and insist that you receive permission to cite. The issue
   becomes less clear if your conference paper is chosen to be published in a
   Proceedings; because publication is involved, you probably have to get
   permission for use there. Check with the editors. And if you publish a book, you
   will certainly need to get permission from the author. Keep a paper copy of your
   request and a paper copy of the reply. Know, too, that if your paper comes out of
   funded research, you may need permission to publish what might otherwise be
   considered the intellectual property of the funding agency, especially if a
corporation is the funding source. If you use an Internet source, you must get
   permission unless the site clearly states that the material is for free use.
   Otherwise, everything on the Internet is copyrighted and will require permission.

Modified from an original document by
Janice L. Hewitt, Ph.D.  The Brown School of Engineering  Rice University, 2009
Copyright and Electronic Publishing: Citation

Basic Information

The copyright protections associated with print also govern the use of audio, video, images, and text on the World Wide Web (WWW).
If a document is on the WWW, that DOES NOT mean that it is in the public domain and may be used with no restrictions. Assume that a work is copyrighted unless the site explicitly authorizes use.
The same copyright protections exist for the author of a work regardless of whether the work is in a database, CD, podcast, discussion board, blog, facebook, personal or commercial web page, or any other electronic form. Electronic journals have the same copyright protection as a print journal. The Rice Connexions site (www.cnx.org) is an exception; it is for free use, though the work must be cited and the author credited in the citation.
If you use a visual downloaded from the Web, cite it in the text at the end of the Figure or Table caption: (Robertson 2009), just as you would cite text in a paragraph. If you use only part of a visual or change it, cite it as (Adapted from Walker et al. 2005). Place the citation inside the period. If you use a downloaded visual in a slide for an oral presentation, include the citation (but it can be in very small print at the bottom of the screen).
Put all electronic citations in your Bibliography or Works Cited.

Tips on Using Internet Resources

ALWAYS credit the source of your information.
Check to see if the author provides information on how his/her work (e.g., video, audio, graphic, icon, web page) may be used. Follow the guidelines, if they exist.
If possible, ask the owner of the copyright for permission to use the work. Because a journal usually owns the copyright of a published article, contact the journal for permission to cite. Some journals will give you blanket permission to cite an article for a thesis or dissertation if you cite the journal. Keep a paper copy of your request for permission and of the permission received. If you then wish to publish parts of your thesis or dissertation, you must check journal requirements for citation requirements. Written permission is required by many journals; it is essential in a book, whether an e-book or print version.
If you use one of your own (first author) published articles in your thesis, you don’t need permission from the other authors because all the authors have equal copyright rights, though as a courtesy, you should talk to them about your plans. In your thesis clearly state the source, however, and recognize the contributions of the other authors. Most journals will give you permission to use your published paper in your thesis, but check the contract!
If you post on your personal web site a chapter from your unfinished thesis or a paper you plan to submit for publication, it is considered published and copyrighted by the act of placing it on the Internet. Some journals will allow a previous posting on a personal web site; others will not. Some will let you reference it on your personal website with a link to the journal. Check the Style Guide and publishing requirements in the journal you wish to submit to before you post your work! Become familiar with the requirements of the major journals in your field.
Guidelines for Citing Electronic Media

Check with the journal, your advisor, or your professor to determine what style is required. The APA style guide and the Chicago Manual of Style are commonly used, but some journals have their own style sheets. If you are submitting for publication outside the U.S., style expectations will differ. Preferred style may differ from field to field, as well. Ask fellow graduate students if they can recommend software, some of which is capable of automatically reformatting to differing styles. If you have kept an accurate and complete electronic file of notes on what you read, you’ll be able to meet any requirements. (You may download the Template for Taking Notes on Research Papers Read from www.engr.rice.edu.)

What to Include (if available)
Name of the author, editor, compiler, or translator of the document or graphic. Last name, First initial.
Date of document’s publication or last update on the Web site. If the publication date is not known, use n.d. to indicate “no date” (n.d.).
Title of the document, graphic, or the Web Site.
Publication information--the name of the main Web Site where the document or graphic is posted.
Page number range or total number of pages, paragraphs, or other sections, if they are numbered.
Date accessed and location of the material on that date: Month, day, year; URL, DOI. Keep a paper copy to prove the date accessed to protect yourself if it disappears from the Web.
If you download and print a copy of an article published as print, you may cite it as a printed source. If you cite an article in an electronic journal, you must cite it as a Web source. If you read it on a Kindle or similar source, be aware that graphics are often omitted or distorted.

Examples of Citation in a Bibliography or Works Cited

Notice that the same basic information is included in the three entries for journal articles, although the styles differ. Choose the style appropriate for what you are writing, and then be consistent within the document. You must follow a style guide.
If the Bibliography is set up numerically rather than alphabetically, as would happen when references are numbered consecutively within a text, the entries would be numbered and the authors’ names would all be first name first, as in [1] Christopher Beattie, Mark Embree, etc.

Print sources


Electronic sources

Travis, E. R.; Hannink, N. K.; van der Gast, C. J.; Thompson, I. P.; Rosser, S. J.; Bruce, N. C. Impact of transgenic tobacco on trinitrotoluene (TNT) contaminated soil community. Environ. Sci. Technol. 2007, 41 (16), 5854-5861; DOI 10.1021/es070507a. (As illustrated in the Style Guide for Environmental Science & Technology; note the substitution of the DOI for the URL and date retrieved when the DOI is available. The Style Guide also gives examples of how to cite different kinds of sources.)


Template for Taking Notes on Research Articles:
Easy access for later use

Download this template from the Rice University Engineering Web Site: www.engr.rice.edu

Use the following format (or something similar—from LaTex or Endnote, for example) to make an electronic record of your notes for later easy access. You may think you’ll remember everything you read, but details will slip away. The time spent filling out the form will help you understand the reading and will save you hours of rereading when you write a Background, Related Work, or a Literature Review section. Put quotation marks around any exact wording you write down so that you can avoid accidental plagiarism when you later cite the article.

Complete citation. Author(s), Date of publication, Title (book or article), publisher, Journal, Volume #, Issue #, pages. How you use this information will vary by journal Style Sheet requirements, class requirements, or thesis advisor/departmental requirements. Put everything down initially so you’ll have what you later need. Use the Web to access detailed examples of Chicago or APA styles. You can also find examples in a writer’s handbook such as Diana Hacker’s The Bedford Handbook (7th edition with 2009 MLA Update or 8th edition). Always be consistent within a document!

If electronic source: URL (may be required by your advisor or professional journal); DOI (digital object identifier) if available or name of database or document number; date retrieved

Key Words:

General subject:

Specific subject:

Authors’ Hypothesis or Claim:

Methodology:

Result(s):

Evidence:

Summary of key points:

Context and relationships (how this article relates to other work in the field; how it ties in with key issues and findings by others, including yourself):

Significance (to the field; in relation to your own work):

Important Figures and/or Tables (brief description; page number):

Cited References to follow up on: (cite those obviously related to your topic AND any papers frequently cited by others because those works may well prove to be essential as you develop your own work):

Your evaluative comments on the work:

Janice L. Hewitt, PhD, Brown School of Engineering, 2009  jhewitt@rice.edu

A-30
**When should I reference something?**

Give a reference if
- its someone else’s idea
- its some one else’s technique
- its some one else’s observation

Disruption of xxx blocks the yyy pathway in Arabidopsis (Smith and Jones, 2003). Because of their similarity to xxx, the abc kinases may be part of the yyy pathway (Doe, 2005). To test this, I will use homologous recombination (Jones and Smith, 2001) to disrupt abc1 and determine if this blocks the yyy pathway.

You could leave the reference off of the second sentence only if this is completely your idea, and was not published by someone else or told to you by someone else. So if Doe mentioned this idea to you but never published it, you would write:

Because of their similarity to xxx, the abc kinases may be part of the yyy pathway (Doe, personal communication).

A good rule of thumb is that each sentence in an introduction needs a reference; sometimes a sentence clearly continues the description of the work in a previously referenced sentence and then doesn’t need a reference.

**How do I reference material from a review article?**

Sometimes you get a review article (Epsiloni, 2008) that reads something like

The abc kinases were first discovered by Alpher (Alpher, 1982). There are 15 abc kinases (Beta, 2007). There are two types of abc kinases, type I and type II (Gamow, 2006). The type I but not the type II abc kinases are present in plants but not in animals or fungi (Delter, 2008).

If you paraphrase the above section without reading the four articles, and/or without referencing the review article, you will be in trouble. If you didn’t read the 4 original papers, you should only reference the review article:

Two types of abc kinases have been described (see Epsiloni, 2008 for review).

If you read the 4 original papers, and in your writing you follow the general outline or format of the review paper (or any other document), you need to reference the review paper or document.

A recent review Epsiloni (Epsiloni, 2008) describes how Alpher first identified abc kinases (Alpher, 1982), and that are 7 type I and 8 type II abc kinases (Gamow, 2006; Beta, 2007)…..