

EEB PhD Appraisal Exam Checklist

The purpose of the Appraisal Exam is to evaluate the students preparedness to proceed with their PhD and provide constructive feedback to the student to help them succeed with their research. The EEB Appraisal Exam involves the preparation of a written research proposal, a 25-30 minute seminar that presents the proposed research, and a 2-3 hour oral exam that follows the seminar in which the exam committee asks the student questions about the proposed research as well as questions from the EEB Appraisal Exam Question Bank.

The EEB Appraisal Exam should occur between 14 and 20 months after first registration for students in the regular PhD pathway (4 years in funded cohort) or between 14 and 26 months for students in the PhD-U pathway (including MSc-PhD transfer students; 5 years in funded cohort). All communication with the EEB Graduate Office generally involves Kitty Lam, the EEB Graduate Administrator, at <grad.eeb@utoronto.ca>.

3-6 months in advance of your Appraisal Exam:

- Review the regulations and advice about Appraisal Exams in the following documents:
 - “EEB Guidelines and Question Bank for PhD Appraisal Exam”
 - “PhD Appraisal Exam Report”
 - “EEB Grad Handbook”
 - “Checklist and Advice for the Appraisal Exam” (this document)
 - All of these documents are available on the Grad Student section of the EEB website (scroll down to the Appraisal section): <https://eeb.utoronto.ca/education/graduate/graduate-handbook/>
- Discuss potential exam committee members with your supervisor(s)
- Organize a study group with other EEB students to prepare for the Question Bank
- Ask your supervisor how far in advance they would like to receive a draft of the proposal, and how quickly are they usually able to return feedback between revisions
- Outline and begin drafting parts of your written research proposal
 - Review the documents listed above for details on length, formatting, etc.

1-3 months in advance of your Appraisal Exam:

- Get your Appraisal Exam Committee approved by the EEB Grad Office. You must provide by email to the EEB Grad Office the details on which EEB faculty will serve on it and confirm the proposed exam date
 - Supervisor(s), 2 Thesis Supervisory Committee members, 2 additional EEB faculty
- Ask members of your Appraisal Exam Committee if they want you to understand background topics beyond those covered by the Question Bank
 - Review the Appraisal Exam instructions in the “EEB Grad Handbook”
- Complete a draft of your written thesis proposal

- Review the documents listed above for details on length, formatting, etc.
- Outline and begin drafting your Appraisal seminar (25-30 minutes)
 - Review suggestions in the “Advice for the Appraisal Exam” at the end of this document
- As of fall 2024, the EEB Graduate Office will schedule Appraisal Exam dates/times and locations for new students. But you should confirm the timing details for yourself and your Appraisal Committee members, and inform the EEB Graduate Office of those details.
- If you started prior to 2024 and did not opt in for scheduling by the EEB Graduate Office, you will need to organize the date/time and location of your seminar and *in camera* exam.
 - On the St. George campus, aim to schedule your seminar for 12pm (noon) and inform the seminar coordinator, with your *in camera* exam to follow immediately afterward. Seminars usually take place in RW432 or ES2144. The private portion of the exam usually takes place in ES3056, ES1014, ES2142, or RW435E. You can check Room Booking availability for the RW and ESC (UTORid login required) or email EEB reception <eeb.reception@utoronto.ca>: <https://eeb.utoronto.ca/resources/>
 - If at UTM or UTSc, speak to your seminar coordinator about possible times for your talk, though you may also give your seminar and take your exam on the St. George campus. For UTSC, contact Fahda Kulmiye <fay.kulmiye@utoronto.ca> (or the main Biology office for advice about who to contact). For UTM, contact Grace Barr <grace.barr@utoronto.ca>.

3-4 weeks in advance of your Appraisal Exam:

- Confirm that the proposed time for your public seminar and *in camera* exam works for all members of your exam committee
 - Allow at least 3.5 hours in total for the talk (25-30 minutes), questions from the audience (5-10 minutes), a short break before the exam starts (10-15 minutes), the *in camera* exam (2-2.5 hours), faculty deliberations before and after the exam (15-30 minutes), and feedback after the exam (5-10 minutes)
- Confirm the exam time and location with the EEB Graduate Office
- Organize a ‘practice’ exam and deliver a practice talk
 - Invite supervisor(s), lab mates, and/or other members of EEB to provide feedback

2-3 weeks in advance of your Appraisal Exam:

- Send the title for your talk to the EEB Graduate Office
- Send your research proposal and abstract to the EEB Graduate Office
- Send your research proposal (both Word and PDF files) to your Appraisal Exam Committee
 - Review the documents listed above to ensure proper length, formatting, etc.

1 week in advance of your Appraisal Exam:

- Finalize your seminar slides
- Finalize preparations for Question Bank
- Manage any anxiety in constructive ways with friends, family, and nature!

Advice for the EEB PhD Appraisal Exam:

The written proposal, the seminar, and the *in camera* examination

Prepared and approved by the EEB faculty (revised and updated August 31, 2024)

Aims of this document

The primary intent of this advice document is to provide students preparing for their Appraisal Exam with guidance on (1) the structure and content of the research proposal document and (2) the types of questions students should be prepared to answer during the oral defence. It also provides some advice on the seminar and the Question Bank. **We strongly recommend that you also confer with your supervisor(s) and Thesis Supervisory Committee members about whether they have additional suggestions, alternate views, or contrary perspectives for any of the advice provided here.** After all, they will participate in your Appraisal Committee and so their perspectives on evaluation are especially valuable.

Goals of the EEB PhD Appraisal Exam

The written PhD research proposal and the *in camera* oral defense of the proposal are important components of a successful PhD Appraisal Exam in EEB. As explained in the “Guidelines for a PhD Appraisal Examination” document, the Appraisal Exam is designed to:

- 1) Determine whether the student can think critically, conduct research, and communicate at a level sufficient to produce an original, high-quality thesis;
- 2) Ensure that the proposed research has sound scientific rationale and feasibility;
- 3) Assess whether the proposed research can be completed within the remaining duration of the doctoral program;
- 4) Ensure that the student has sufficiently broad knowledge in ecology and evolutionary biology to recognize and effectively pursue opportunity for research and collaboration in these fields;
- 5) Provide constructive feedback to the student on the proposed research.

Points 1 and 2 above are addressed in the research proposal that the student writes, on which they are evaluated by the Appraisal Committee during the oral *in camera* portion of the PhD Appraisal Exam that focuses on the proposal. **See Appendix I below for the format of the Appraisal Exam.** Please note that there is an expectation that you will take your exam on time; if you take the exam late, the expectations will be higher.

Initial preparations for the Appraisal Exam

You should begin preparing for your Appraisal Exam at least 3 months prior to the exam date. The length of time required will depend on your background in EEB course topics. This timeframe does not mean 3 solid months of preparation; it means setting aside a few hours per week for background reading in ecology and evolution, and to develop your thesis proposal.

- Be sure to review the EEB Graduate Student webpage for documents about the Appraisal Exam including the Question Bank, research proposal, and seminar.
<https://eeb.utoronto.ca/education/graduate/graduate-handbook/>
- The “EEB Grad Handbook” and the “EEB Guidelines for PhD Appraisal Exam” document provide overviews of the proposal, seminar and exam, including the list of Question Bank questions that you might be asked during the breadth part of the exam.
- The “Appraisal Exam Report Form” contains the expectations the guidelines for the faculty roles in posing questions and appraising the candidate.

Appraisal seminar: This advice document does not provide explicit advice on the seminar, but much of the advice for the proposal is relevant to the seminar. It may be useful to use the same general organization of the material for both the seminar and the research proposal document. Do keep in mind the broad range of backgrounds of members of EEB; much of the talk should be accessible to everyone. The talk should be 25-30 minutes long.

Key questions to expect about the research proposal

Here we list some kinds of questions frequently asked by the PhD Appraisal Committee. Note that if these issues are described and justified well in the written proposal and the seminar, then there will be less focus on them during the exam.

Hypotheses and Questions

- What is the unifying theme of your research? If your planned thesis chapters address distinct themes, why?
- What are the main hypotheses and/or questions you are testing?
- Why are these questions/hypotheses important in the study of ecology and evolutionary biology, and are they novel?
- Does your research matter beyond academia and, if so, why?
- What appeals to you about this research (why do you care)?

Background knowledge on theory, experiments, and biology of organism

- What is already known with respect to the theoretical and empirical evidence that addresses your research hypotheses/questions? Make sure your statements are well supported with citations.
- Who are the early pioneers in your specific research area? How does your work build on what they and others in the field have already established?
- What knowledge gaps exist in the literature for the scientific problem you seek to address?
- Justify your choice of experimental system, organism, community or ecosystem at a level that is appropriate for your research questions. In this justification, describe the relevant biology of the system, etc.

Methods

- Explain the experimental, theoretical, and/or statistical approach that you will take to answer each of your research questions.
- What methods have other researchers used to answer similar questions?
- What are the strengths and weaknesses of your methods?

Results and Significance

- Provide a figure showing predicted results that answer your research question(s) given different possible outcomes.
- Which aspects of your proposed thesis are riskiest and why? What backup plans have you considered?
- Which aspects of your proposed thesis do you expect to be novel?
- How might your results impact disciplines outside of your field?

Structure of the written research proposal: General guidelines

As described in EEB's Appraisal Exam "Guidelines" document, you have 4000-5000 words (15-20 double-spaced pages, 12 pt font, 2.54 cm margins) to present your written research proposal: (1) the conceptual framework of the thesis, (2) your hypotheses/objectives/questions, (3) methods, (4) a timeframe for completion of the research, and (5) analyses of any preliminary data that you might have. Try to avoid specialist jargon. The length limit does not include figures, tables, or citations, and you can also attach any appendices that might be useful, such as additional figures/tables or an unpublished manuscript that you wrote as part of your doctoral thesis work. However, view appendices as 'optional' material that your committee may not read; anything that is essential for the committee to read for the Appraisal Exam should be in the main text.

Although there is no one 'correct' format or style, here are some suggestions for the content and lengths of the various sections of the PhD research proposal document.

- Most faculty prefer to have the tables and figures embedded in the main document; be sure to check with your supervisor(s) and Appraisal Committee about that.
- At the top of the document, please specify the number of words in the main proposal, excluding the references, tables, figures, or appendices.
- Include the times and locations of your seminar and the *in camera* part of your exam.
- Expect to work through several (or more) drafts of your proposal, with comments from your supervisor, lab mates, and other students in the department. Make sure you allow ample time for feedback and revisions.
- When you send the document to the members of your exam committee, please send it both as a Word file and as a PDF. Send these files 14 days before the exam date.

Structure of the written research proposal: Specific recommendations

1) Introduction to the scientific problem and research area:

- Length: 6-10 concise paragraphs (approx. 1.5-3 pages (450-900 words))
- Provide an overview of the biological problem and why it is important.
- Concisely review what is known about your topic and identify gaps in the literature that require further attention.

2) Objectives, hypotheses and questions:

- Length: approx. half a page (150 words)
- Clearly articulate the objectives of your thesis.
- Explicitly state the hypotheses and/or research questions that your thesis will address. These may be formulated in terms of long-term objectives along with more direct hypotheses and outcomes of the proposed research.

3) Study system (if appropriate)

- Length: 0.5-1 pages (150-300 words)
- Describe the organism, population, community and/or ecosystem of your research focus.
- Why is this system particularly appropriate for your research questions?

4) Description of Projects:

The number and focus of individual projects that comprise the thesis should be determined by the student and the supervisor(s), but it is expected that most proposals will describe 3-5 projects that together address the central theme of the thesis. Some theses will contain chapters on distinct themes, and so the proposal should address why it is appropriate or valuable to group those distinct projects together into a single dissertation. For each project, provide a brief introduction and methods. It is common for the first one or two projects to be explained in greater detail (2-3 pages each), with specific methods and, ideally, some preliminary results. For subsequent projects (0.5-1 page each), usually the ideas and basic methodology are briefly described without any results, as these typically represent future work yet to be done.

The Appraisal Committee recognizes that, as projects develop and results come in following the Appraisal Exam, you may shift the emphasis of certain components of the thesis. It is not uncommon that entirely new projects may be developed or substituted for initial proposals for thesis chapters. Nonetheless, the research proposal for the Appraisal Exam is a 'research plan' not just a 'progress report', so it is important to lay out at least some of your plans for your thesis. Preliminary results for at least some aspects of your plans are important, but even more important are your future directions/broader plan of projects still to do. Please also note that

the Appraisal Exam should be completed well in advance of the collection of all the data for the thesis (whether the data are simulated or empirical).

If possible, provide a breakdown of how the projects might correspond to putative thesis chapters. Keep in mind that a final thesis typically will yield 3-5 'stand alone' journal articles.

5) Significance of Research:

- We recommend that you include a concise (1-2 paragraph) discussion of the significance of the thesis to its discipline and to the scientific community at large. This information can provide useful context to the Appraisal Committee about the potential impact of the thesis results.

6) Timeline:

- Details about the thesis timeline are critical. They are one way that the Appraisal Committee evaluates whether the proposed research is feasible in the remaining duration of the PhD. At minimum, give the rough, expected completion dates for each project (e.g., Gantt chart). Many faculty prefer more detail (e.g., time in the lab/field to collect data for specific projects), so speak with your supervisor(s) about their expectations.
- Provide an explicit timeline that shows, for the more developed projects, when you intend to complete the experiments/simulations/etc., analyses, writing and submission of papers. Give rough estimates for the projects that are not as well developed.
- Note that the Appraisal Committee realizes that it is not always possible to anticipate factors that may delay one or more project components, and that your timeline can change as your thesis develops.
- Although you don't need to include this in your proposal, you should think about how you will prioritize your projects so that it will be possible to drop the one with lowest priority if it becomes necessary to do so in order to finish in a timely fashion. In general, it is good to anticipate and discuss which aspects of your project(s) are riskier and what fallback plans you might have.

7) References:

- The proposal should be thoroughly referenced with a consistent style of the references and citations (usually 20-30 references).

8) Appendices:

- Appendices can include: supplementary figures and tables; relevant manuscripts that you wrote that are about to be submitted, have been submitted, or are published.

- You may also include your CV as an appendix to list publications, submitted manuscripts, conference presentations, TAing, contributions to the department, societies, etc. Please include the year(s) for all activities.

The Question Bank questions

Students should aim for a deeper understanding of the Question Bank questions than just a 1-2 sentence answer or a rote memorized answer. Students should be prepared to address follow-up questions related to questions in the Question Bank. See the EEB Graduate Handbook for the regulations on the Question Bank questions and the “Guidelines for a PhD Appraisal Examination” document for a list of the questions.

- The EEB faculty debated long and hard about how to encourage (and ensure that) our students have a solid, broad understanding of the fields of ecology and evolution. Some wanted students to write full-on comprehensive exams, as occurs at many universities. Some felt that was overkill, so instead, we took what we thought would be the least torturous and most helpful approach—responses to a set of Question Bank questions.
- The questions represent important ideas/themes in different areas of ecology and evolution. Be prepared to answer not only the question, but also to explain the question's context and to answer a follow-up question or two.
- Faculty are looking for evidence of understanding and comprehension of the general issues raised by Question Bank questions, and the context for how these questions relate to ecological and evolutionary research. Many faculty will view as incomplete or even erroneous any answers that give the impression of regurgitated samples of keywords or memorized phrases sampled haphazardly from a word cloud that lack context, comprehension, or ability to relate the question to real research issues.
- You will likely be pushed a bit deeper on some of the questions. This probing is to explore how deep and broad your knowledge is. You are not expected to know everything about all topics (who does?), but as a doctoral student, you should be a scholar and at least strive to have some breadth.
- You are expected to have a greater knowledge about the questions most closely related to your field. The Question Bank is the only aspect of the Appraisal Exam where everyone knows the questions in advance. While people commonly forget an answer or two, or confuse a few points, there is no excuse for overall poor responses. The questions are known in advance, agreed upon, and widely circulated. Responding poorly reflects a lack of serious preparation.
- You can prepare for questions on unfamiliar topics by reading relevant sections of textbook chapters. Some students (who have done well) formed study groups to discuss and work through the answers to the questions. If you are unfamiliar with some subject areas, request permission to sit in on undergraduate lectures covering those topics.

- Go to seminars (you are supposed to anyway). It is a great way to efficiently learn about areas outside your own expertise. Go to a journal discussion group(s).

Why you need breadth

Breadth of knowledge is important, and not just because you are a scholar.

- You would not fail your Appraisal Exam if you perform poorly on only the Question Bank questions, but EEB faculty take the Question Bank questions seriously. If you don't pass this part, they can require you to take an extra course, write a review paper, etc.
- Whatever your career path, you will always need to know about things outside your area of expertise. Whether you are lecturing in a course, acting as a consultant, working for the government, etc., breadth will be important. Showing knowledge and interest in what other people are doing can also be key during job interviews.
- Some of the most exciting scientific discoveries come from putting together ideas from very different fields.

Appendix I: Procedures during the Appraisal Exam

Here, we briefly describe how the exam will proceed. **Plan to allow at least 3.5 hours for all components of the exam.** After delivering the 25-30 minute seminar (plus 5-10 minutes for audience questions, and a brief break if requested), the student and Appraisal Committee will move to the private exam room (or the members of the audience will leave the seminar room). Initially, the student will be asked to leave the room so the committee can fill in paperwork.

After the student returns, each member of the Appraisal Committee will use approximately 10-15 minutes to ask several questions on your research proposal and seminar. The order of questioners will proceed as: first, those faculty who are not on your Thesis Supervisory Committee, then your Thesis Supervisory Committee members, and finally your supervisor(s). After the first round, the examiners will do a second round of questioning, and then there may be one or two final questions from some or all of the examiners.

After the rounds of questions on the proposal, the next phase of the exam focuses on breadth. Students may ask for a short break before the breadth part of the exam. In the breadth section, examiners will each ask 2-4 questions from the Question Bank. This part of the exam will take 20-30 min.

The candidate will then be asked to leave the room. The examiners will discuss your proposal and presentation, and responses on the different components of the exam. They will also talk about your progress-to-date and what remains to complete the thesis. These discussions usually take 10-20 minutes, but potentially longer (you might want to text a buddy to wait with you). Following these deliberations, you will be called back into the exam room and be told the outcome of the exam, how you performed on the various components, and what requirements

and recommendations the committee has for you. The conversation usually concludes with an interesting and useful discussion about the cool aspects of your project. Now, go for drinks.

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