

## **BIOL 801 Comprehensive Exam on the Ph.D. Research Area**

Overview: A departmental committee will examine the candidate's knowledge of their proposed research methods and the general area of Biology related their dissertation proposal. Students will submit a comprehensive *written research proposal*, which will serve as the basis for the oral examination. The course is graded as Credit/No Credit, and is required of all Ph.D. students.

**Biology 801 should be completed in the first 12 months of the program for the main PhD stream. For students who transfer from the MSc to the PhD program, BIOL 801 and 802 must be completed within the first three semesters of the transfer.**

BIOL 801 has several purposes:

- 1) It is part of a PhD candidacy examination process (along with BIOL 802).
- 2) The course encourages students to think formally about their subject area and the general structure of their dissertation program.
- 3) The course facilitates discussion and dialogue about the proposed research (experimental design, methodology, rationale etc). This is always a useful process for sharpening thinking about a research project.

Required of the Student: The student will write a formal dissertation research proposal that is approximately 20-25 pages of double-spaced text (not including title page, reference list etc), in 12 point font with appropriate margins. The proposal should clearly layout the background and rationale for the work, the general approach to be taken, specific methods, etc. Students should clearly illustrate the potential novelty and contribution of the work by appropriately identifying gaps in the field in their Introduction. Accordingly, the text should thoroughly review pertinent literature and background information to set the stage for the research to be proposed, and to demonstrate a level of mastery of the subject area suitable for PhD candidates. Figures, concept diagrams, or other visual aids may be used in the Introduction to augment the information presented in the text. The remainder of the proposal will present hypotheses and predictions, experimental design, methods, etc. (i.e., how the research will be conducted, and why). For students who have already collected data (especially applicable to students who are transferring from the MSc to the PhD program), it is acceptable and encouraged to describe the methods for experiments/studies already undertaken. It is also acceptable to present data from those experiments. However, try to strike a balance in the content; the emphasis should be on the reasons for conducting the research and the justification for the methods employed and to be employed, rather than a detailed progress report.

In terms of format, the research proposal may be laid out in various ways. For example, it is possible to have one large, comprehensive Introduction & Literature Review (which includes hypotheses to be tested), followed by a Methods section (which includes explanations for choosing those methods). Alternatively, the proposal may be broken up into sub-proposals, in which each portion/sub-project of the overall research has its own Literature Review & Introduction and Methods section. Lastly, students can choose to use a hybrid system of organization, in which there is a main Literature Review & Introduction, followed by sub-sections dealing with discrete parts of the research. Regardless of the organization that is used, it is very important to place the proposed research in the context of the current state of the sub-

discipline, and to provide adequate descriptions of the methods chosen to allow the reader to understand the nature of the research.

**\*The research proposal should be submitted to the examining committee at least two weeks prior to the examination date.\***

Required of the Faculty Supervisor: PhD students in the first 12 months of their program are new to their area of study. In reality, their dissertation research is being designed and conducted in close consultation with their Faculty supervisor. Thus, it is inappropriate to expect students to write the proposal for BIOL 801 without input and guidance from a faculty member.

Accordingly, the Faculty supervisor should facilitate the BIOL 801 proposal by providing input on organization and presentation of the research, suggestions about literature to read and cover in the Introduction, and general guidance regarding scientific writing. For BIOL 801, it is acceptable for the Faculty supervisor to read and comment on a draft of the written proposal. However, keep in mind that it is the student who is being examined (not the Faculty member), so re-writing sections of the proposal or very heavy editing should be avoided.

The Examining Committee for BIOL 801: The examining committee is the same as the student's PhD supervisory committee. According to FGSR regulations, the supervisory committee of a PhD student must consist of, at minimum, a supervisor (or co-supervisors), two regular committee members (from the principal academic unit and related academic units selected because of their knowledge of the proposed research field), an internal-external member (from a unit other than the student's home unit), and a chair of the committee. In the Biology Dept the chair of the supervisory committee is the Graduate Coordinator; the chair does not normally ask questions during the oral exam. The student should work with their faculty supervisor to schedule the exam date, time, and location. It can be difficult to coordinate all of the people involved, so plan early!

The BIOL 801 Oral Exam: The examination will begin with the student giving a 15-minute presentation that summarizes their PhD proposal. Given the short time allotted, the presentation should focus on the rationale for the research, the general approach to the research questions, and anticipated significance of the findings. The student should be prepared to answer questions about both the theoretical basis and rationale for the proposed research, and also detailed questions about methodology. It is also likely that general questions about the field of study will be asked. The oral examination is typically 2-2.5 hours in duration.

Next Steps after the Completion of BIOL 801: Shortly after the completion of BIOL 801, a PhD student will be assigned a topic for BIOL 802 (which is the second part of the PhD candidacy exam). Discussions about potential topics for BIOL 802 are typically initiated while the supervisory committee is together after the BIOL 801 oral exam, but the final decision about the BIOL 802 topic is typically decided a later point.

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