

## Biomedical Engineering Program Policies and Procedures Ph.D. Thesis Proposal and Comprehensive Exam

---

### ***Thesis Proposal and Comprehensive Exam Format***

The BME Ph.D. Comprehensive Exam is held with the student's Ph.D. Advisory Committee plus a Chair external to the committee (assigned by BME)\* and consists of the following three components:

Part A: Thesis Proposal: The student must present a written Thesis Proposal prepared according to the guidelines in Appendix A and circulated to the committee members at least one week before the examination.

Part B: Thesis Proposal Presentation: The student must make an oral presentation to the committee of their Thesis Proposal (no longer than 20 minutes, not including questions) and defend it by responding directly to questions from the committee related to the background, progress, and proposed work.

Part C: General Competence: The exam will follow the style of a PhD exam, with examiners asking questions in two rounds (15 mins, 5 mins, firm) on the proposal AND basic knowledge areas as determined at the previous Comprehensive Preparation Meeting. Throughout the Thesis Proposal presentation and the subsequent question and answer period, the student must demonstrate a general knowledge and competence in the relevant areas of Biomedical Engineering and tools necessary for the project. This will involve responding to "higher-level" questions that may not be related directly to the student project. Areas on which the student may be questioned will have been defined by the Advisory Committee at the earlier Comprehensive Exam Preparation Meeting.

### ***Expectations for Comprehensive Exam***

This examination is designed to achieve several goals.

- Provide a mechanism to allow the committee to assess the candidate's readiness to proceed further within the PhD Program.
- Provide the candidate with the learning experience of synthesizing the essence of the research in a format that is convincing and comprehensible to a lay audience (grant funding panel for example).
- Act as a dry-run of the thesis defense experience.

### ***Thesis Proposal and Comprehensive Exam Outcomes***

Each component of the Examination will be rated as *Satisfactory*, *Conditional*, or *Unsatisfactory*, decided by majority vote. In case of ambiguity (e.g. 1 vote for each grade) the committee will decide grade by consensus. The overall result of the Ph.D. Comprehensive Exam is determined as follows:

**Satisfactory:** If all three components are rated as *Satisfactory*, the student will be deemed to have satisfactorily completed all three components and will receive an overall "Satisfactory" grade. The next meeting will be a regular Advisory Committee Progress Meeting to be scheduled within one year of this meeting.

**Conditional:** If one or more of the components is rated as less than *Satisfactory* and no more than one component is *Unsatisfactory*, the student will receive an overall "Conditional" grade and be asked to take appropriate corrective measures within three (3) months. The area(s) rated as less than *Satisfactory* will be noted in the comments of Form 106. The committee may also impose one or more conditions (noted in "Recommendations" in form 106) that must be fulfilled prior to the next meeting. If the student does so to the satisfaction of the committee, the student will be awarded a "Pass" and will continue in the program. Otherwise, the student will receive an overall "Unsatisfactory" grade and must follow the procedure in the "Unsatisfactory" section below.

**Unsatisfactory:** If two or more components are rated as *Unsatisfactory*, the student will receive an overall "Unsatisfactory" grade and be required to re-take the entire exam within three (3) months. If the student receives an overall "Unsatisfactory" grade a second time, the student will be required to withdraw from the program.

### ***Thesis Proposal and Comprehensive Exam Timing***

Given the importance of the Ph.D. Comprehensive Exam and the consequences of failure, the exam will normally be held no later than 6 months following the Comprehensive Exam Preparation Meeting.

**Important Note:** It is the responsibility of the student to inform him/herself of the Comprehensive Exam Policy and Procedures and deadlines. Failure to comply can lead to expulsion from the program, unless strong justification is provided and confirmed in writing by the Supervisor.

The methods adopted for examination and evaluation and the areas to be examined in Comprehensive Examinations are specified by departmental regulations and are in agreement with the graduate studies guidelines approved by the School of Graduate and Post Doctoral Studies.

**Forms to bring to the meeting:** Committee Consensus Report (106), Examiner Report (107) (4 copies)

## APPENDIX A

The Thesis Proposal should take the form of the research module of a CIHR grant proposal and should follow the formatting and other instructions given on <http://www.cihr-irsc.gc.ca/e/29300.html>

The research proposal should include the following sections:

1. **Lay Summary:** Suitable for use as a press release.
2. **Summary of research proposal:** Summarize the objective(s), hypothesis and research plan. A maximum of one page may be used.
3. **Summary of progress:** Do not include references, tables, charts, figures or photographs. Summarize progress towards the Thesis and/or summarize previous work relevant to this proposal.
4. **Response to previous reviews - Up to 2 pages:** This section should only be used when submitting a revised thesis proposal following a Conditional or Unsatisfactory rating. Students should use these pages to respond to previous committee comments and indicate what corrective actions have been taken.
5. **Research proposal - (10 pages):** The research proposal should be clear and concise. Page limits do not include references, tables, charts, figures and photographs. Legends should be succinct. Detailed descriptions of methods and discussion of results should be included in the body of the proposal. They should not be in the legends nor included as an appendix. Questionnaires and consent forms may be attached as appendices.

### In the research, student must explain:

- a) What they plan to do (central hypothesis, research question, specific objectives)
  - b) Why this research is necessary (review of previous work done on the subject matter, rationale)
  - c) Why this is important (new knowledge to be obtained, improvements to health that will result)
  - d) How they are going to do it (work plan, timelines, analysis and interpretation of results, pitfalls, ways around the pitfalls, alternatives)
  - e) Why *they* should do it (relevant prior experience and skills, collaborators for technical gaps, preliminary data showing feasibility)
6. **Appendices:** Where appropriate, the student may append documents such as thesis chapters or journal articles in support of their proposal. A maximum of five such documents may be appended.

### How to prepare and format proposal and attachments:

Please follow these guidelines for formatting each page of the Thesis Proposal. To be forwarded to committee as a consolidated PDF file.

- Indicate your name and the project title at the top of each page.
- Indicate the page number clearly at the bottom of each page.
- Insert a margin of 2 cm - minimum - around the page.
- Observe page limitations, additional pages may NOT be added unless specified.
- Use only letter size (21.25 X 27.5 cm) white paper/background for all attachments.
- Photo-reduce the supporting documents if the originals are larger than letter size
- Use a font size of 12 point, black ink. Six lines per inch. No condensed type or spacing.

\*In exceptional circumstances, where the assigned Chair cannot make it at the last minute, the student's Supervisor may act as Chair instead.