

School of Engineering's Doctoral Comprehensive Knowledge and Research Proposal Examination Procedures

PhD students in the School of Engineering are required to pass two examinations before advancing to the status of a “PhD candidate”:

1) A ***comprehensive knowledge examination*** used to evaluate the student’s fundamental knowledge necessary to successfully carry out research at the doctoral level.

2) A ***research proposal examination*** used to evaluate the student’s knowledge pertinent to the scope, objectives, methodology and resources required to carry out the proposed research.

As per the regulations of the College of Graduate Studies, both examinations must be completed within 36 months of the student’s enrolment in the PhD program. Upon successful completion of both examinations, the student will be admitted to candidacy.

These procedures will apply to all SoE PhD students who begin their doctoral degree on September 2017, or thereafter.

1) Comprehensive (Fundamental Knowledge) Examination

TIMING

It is recommended that the comprehensive knowledge examination take place within 12 – 18 months after the student joins the PhD program; however, the examination may take place at an earlier date, if approved by the supervisory committee. The examination may also be scheduled at the time of an annual review when all the committee members gather to review the student's progress.

INITIATION

Before a comprehensive examination can be scheduled, the student must have a supervisory committee. A supervisory committee consists of at least three faculty members:

- 1) the student's research supervisor
- 2) two additional SoE faculty members

If the student has a supervisor and co-supervisor, College of Graduate Studies policy still requires two additional SoE faculty members to complete the supervisory committee.

The supervisory committee can be established at any time after the student joins UBC; however, the full supervisory committee must be established no later than 12 months after the student commences study at UBC.

The supervisory committee members will meet with the student, review the general scope of the doctoral research, and identify discipline-specific topics of relevance to the student's research. After a discussion with the student, a date for the comprehensive exam will be set.

PROCEDURE

At least one month before the proposed examination date, the supervisory committee members shall finalize the scope and depth of knowledge expected of the student during the comprehensive examination. Thereafter, the supervisor shall communicate (e-mail is recommended) to the student the instructions outlining the expectations for the examination, including the topics and an explanation of the depth of knowledge expected of the student. Also, the student must be informed of the resources available during the exam (for example, if the exam is a closed / open book exam, or a take home exam; computers / software requirements, etc.). If necessary, the student can meet with individual supervisory committee members to seek further clarification.

EXAMINATION

Recognizing the diversity of engineering fields and the unique requirements for discipline-specific norms, it is up to the supervisory committee members to determine the format of the comprehensive examination. However, it is essential that the examination provides an opportunity for the student to demonstrate mastery of fundamental knowledge relevant to the research area, demonstrate critical thinking skills required to carry out independent research, and demonstrate an ability to communicate answers clearly.

The possible examination formats include:

Option #1: Written examination

Option #2: Oral examination

Option #3: Other (e.g., combined written and oral examination; computer simulation)

In case of Option #1 or #2, the examination should not take more than 3 hours to complete. In case of Option #3, the supervisor (after discussion with other supervisory committee members) must describe the selected format and obtain an approval from the School of Engineering Associate Director for Graduate Studies.

For all examination formats, a written record of the questions asked by the supervisory committee members must be retained. In the case of Option #2, questions and answers will be recorded and summarized by the neutral chair presiding over the examination. The record of questions will be kept in the student's file in the SoE.

After completion of the examination, the supervisory committee members rank the student's performance either as a:

- 1) Pass
- 2) Fail

The "*PhD Comprehensive Knowledge Examination Report*" form must be signed by all supervisory committee members after completion of the examination and submitted to the SoE Associate Director of Graduate Studies, along with a copy of the neutral chair's examination summary.

The supervisor will communicate to the student the outcome of the examination.

- ⇒ If the student fails the comprehensive examination, the student will receive detailed feedback from the supervisor and the supervisory committee members on the gaps in knowledge and any mandatory readings or coursework. Also, the supervisory committee must set milestones for completing any mandatory work and the re-take of the comprehensive knowledge examination.
- ⇒ The student is allowed to re-take the examination within 6 months. The same examination committee members will evaluate the student during the re-take. If agreed by all committee members, the format of the examination may be changed for the re-take.
- ⇒ If the student fails the comprehensive knowledge examination twice, he/she may be requested to withdraw from the program.

2) Research Proposal Examination

TIMING

The research proposal examination must be completed no later than 36 months after the student joins the PhD program. The research proposal examination must take place after the comprehensive knowledge examination.

INITIATION

The student and the supervisory committee members agree on a date for the research proposal examination. Similar to the comprehensive knowledge examination, the proposal examination may coincide with an annual review meeting.

Once a date is set, the supervisory committee informs the student of their expectations regarding the format of the research proposal document (verbally or in writing). It is recommended that the document not exceed 50 double spaced pages (excluding Appendices), and should typically include:

- Abstract
- Literature review
- Research methodology
- Timeline and milestones
- Statement of expected contributions
- Publications to-date

The supervisor may guide the student with preparing the research proposal. However, it is essential that the student demonstrates his/her written communication skills in preparing the research proposal.

PROCEDURE

No less than two (2) weeks prior to the expected research proposal examination date, the student submits to the examination committee (i.e., supervisor(s) and SoE supervisory committee) the research proposal document. The research proposal examination committee consists of:

- 1) Supervisor(s)
- 2) Two supervisory committee members (in addition to the supervisor(s))

The examination committee reviews the proposal and informs the supervisor, who in turn informs the student in writing (e.g., by e-mail) whether the proposal is fit for examination.

- ⇒ If YES: The supervisor schedules and confirms the research proposal examination date.
- ⇒ If NO: The supervisory committee members meet with the student and discuss deficiencies in the research proposal and set a new date for proposal re-submission. The student will be required to re-write the proposal to address the deficiencies.

EXAMINATION

An oral examination of the student's knowledge pertinent to the proposed research will be carried out in the presence of the:

- i) Student
- ii) Supervisor
- iii) Supervisory committee members
- iv) Neutral chair (Associate Director - Graduate Studies or designate; votes only in the case of a hung-jury; does not ask questions)

The examination will consist of two rounds of questioning to test the student's knowledge of the proposed research. The examination should not exceed 3 hours. In general, the examination is open to the public, except in situations where proprietary research is being proposed and the supervisor makes a request to the Associate Director – Graduate Studies for the examination to be closed to the public.

At the end of the examination, the examiners discuss (in camera) the performance of the student. A secret ballot vote will take place with the following options:

- 1) Pass
- 2) Pass with modifications to the proposal
- 3) Fail

In case of a non-unanimous vote, a second ballot can take place after the examination committee discusses the student's performance. The neutral chair will include in his/her notes the rationale for the various assessments. If a unanimous decision cannot be reached after two rounds of voting, the neutral chair will indicate a "split vote" on the "*Research Proposal Examination Form*".

- ⇒ If the student receives a "Fail", he/she can re-take the research proposal examination within 6 months.
- ⇒ If the student receives a "Fail" twice, the student may be requested to withdraw from the program.
- ⇒ If the student receives a "Fail" followed by a "Pass with modification to the proposal", the supervisor and the student must develop a plan for timely completion of the PhD degree (e.g., Gantt chart with milestones). The plan will be submitted to the SoE Associate Director of Graduate Studies for final approval. A copy of the plan will be kept on the student's record. The supervisor will be responsible to ensure that the plan and conditions agreed upon during the research proposal examination are fulfilled.

Once the student has passed the comprehensive knowledge examination and the research proposal examination, the supervisor will submit forms recommending the student's advancement to candidacy.