THE UNIVERSITY OF BRITISH COLUMBIA DEPARTMENT OF MECHANICAL ENGINEERING PHD QUALIFYING PROCEDURES

Objectives

The department requires that incoming PhD students have a variety of skills and knowledge before they are admitted to the PhD program including a broad understanding of undergraduate Mechanical Engineering material and a demonstrated potential to perform novel research. These characteristics are to be demonstrated by the General Knowledge Exam (GKE) and the Research proposal defended within 12.5 months of the program start date.

Procedure Overview

The qualifying procedure consists of two parts: A) the General Knowledge Exam (GKE), and B) The Research Proposal Defense (RPD). All PhD candidates in Mechanical Engineering must pass through this process.

Part A: General Knowledge Exam (GKE)

The department requires that incoming Ph.D. students have a variety of skills and knowledge before they are admitted to Ph.D. candidacy, including a broad understanding of undergraduate Mechanical Engineering material and a demonstrated potential to perform novel research.

The objective of the qualifying exams is to confirm, within the first 8 months, that the incoming students have comprehensive (e.g., not superficial, suitable for role as a teaching assistant) understanding in several core areas of undergraduate mechanical engineering, as well as mathematics. Detailed procedures can be found in the GKEs documentation.

Part B: Research Proposal Defense (RPD)

Purpose of Examination

The RPD aims to ensure that the student has a worthwhile research topic, has clear goals, suitable preparation and other traits necessary to complete a PhD thesis.

Examination Committee and Chair

The Research Supervisor cannot be a member of the examining committee, but he/she will nominate three examiners. The Research Supervisor can choose whether or not to attend the proposal defense. These three examiners should not all belong to the same research group. One examiner would normally be from outside the Department.

The Chair of the examination must be a full professor in Mechanical Engineering. The Chair must not be the Supervisor or one of the Examiners. It is the student's responsibility to contact and secure an appropriate Chair.

Schedule for the Exam

Within 12.5 months of starting the program, the student will be asked to prepare, present and defend a proposal for their research. RPD examinations will be held July-September for students registering in September, and November-January for students with January start dates. The student must arrange the scheduling of the exam, consulting with the committee members and the Graduate Secretary. Allow at least 1 month to arrange the examination date. Please set up date/time for PRD upon receipt of a Chair candidate name.

Written Proposal Details

The purpose of the proposal is to demonstrate that you have selected important research questions, that you bring new ideas or approaches to the problem, and that your plan to complete your PhD is feasible.

The structure of the proposal can be adjusted to suit the subject area and style of research, but following sections are included at minimum.

1. Title page with proposed thesis title, student name, examining committee, supervisor, Chair, time and location of the exam.
2. Statement of authorship indicating briefly (1 page) how the research supervisor contributed to the substantive and editorial preparation of the proposal. Explain how many drafts were reviewed with the supervisor and what information related to the proposal was provided directly by the supervisor (eg., grant proposals, key papers in the field…)
3. Description of the graduate course portfolio. This is a list of the courses used for the 21 graduate credits mentioned above, including title, institute, grade achieved and how the course might contribute to the proposed research (if it does). In a separate list (but overlapping with the list above), describe the courses to be used for the total 33 post- Bachelor credits required for a PhD in Mechanical Engineering.
4. Forms G1-G3 completed as much as possible, ready for approval and signature by the committee. This includes the credit transfer form, if required.
5. Literature review and motivation that finishes with a discussion of the important gaps in existing knowledge.

6. Work plan that indicates the actual technical approach to be taken and the expected timeline for achievement of the critical milestones. Students who have initial results of a study or pilot study results would be encouraged to include these results in the proposal in addition to proposing new work. It is *suggested* that this work plan will be shown as a Gantt chart, highlighting the key dependencies and critical path. In the work plan section, discuss whether there are important elements of risk in the research, and discuss your contingency plans in the event that these elements do not unfold as desired.
7. Statement of key contributions. This section recapitulates the important gaps in the literature that you plan to fill, the reason these are of practical or theoretical importance, and the novel ideas that you will bring to the research.

The proposal may not exceed 6000 words including references and figure captions. It can include up to 6 figures including the Gantt chart. The proposal must be distributed to the supervisor, examiners and Chair at least 10 days prior to the exam, in hardcopy, Word/Open Office and pdf formats.

Oral Presentation and Defense

At the exam the student will make a 30 minute presentation on the proposed work. This is followed by questions intended to determine whether the student has the ability to complete a high-quality thesis as proposed in the written proposal. Questions can be on any aspect of the proposal.

The Chair's job is to ensure that the exam follows these procedures and in particular, he/she should ensure that the following questions are asked at some point during the exam if they are not clearly answered in the presentation:

1. What are the key aspects of novelty in the proposed research?

2. What insights or special ideas have you personally brought to this research?

3. What are the key elements of risk in the plan, and what is your strategy for dealing with this?

The total length of exam is normally 2.5 hours. The Research Supervisor may attend the examination as a visitor and may be asked to provide the committee with verbal comments on the student's progress and research competence and experience. The supervisor would then be required to leave the room and the committee would deliberate regarding the student's evaluation and assignment of a pass or fail on the exam. The committee will also review the courses taken, academic record, and credits transferred during the examination and provide what feedback is necessary.

Students who fail the RPD will, at the discretion of the committee, be given the opportunity to retake the exam within four months of the original exam.

Students are required to submit all the forms Form G1-G3 and Recommendation for Advancement to Candidacy form after the defense. As soon as a student has satisfied all requirements, the department will recommend to the Faculty of Graduate Studies that the student be advanced to candidacy. This status is entered on the University's Student Information System.

Appeal Process

The student can appeal the decision of the RPD committee to their supervisor who can in turn make a written appeal to the head of department who will consult with the graduate advisor and the examination committee.

THE UNIVERSITY OF BRITISH COLUMBIA DEPARTMENT OF MECHANICAL ENGINEERING

PhD QUALIFYING EXAM

FORM G1: EXAMINATION DETAIL

CANDIDATE: _____

STUDENT NUMBER: _____

RESEARCH SUPERVISOR: _____

DATE/TIME/PLACE OF EXAMINATION: _____

EXAMINING COMMITTEE:

Chair: _____

Examiners:

1. _____
2. _____
3. _____

To be completed after the examination:

The committee recommends to the Dean of Graduate Studies that the candidate

a) be advanced to the Ph.D. candidacy [ ]

b) return for another examination [ ]

c) not be admitted to the Ph.D. program [ ]

_____ _____

Chairman of the Examining Committee Date

_____ _____

Graduate Advisor Department Head

THE UNIVERSITY OF BRITISH COLUMBIA DEPARTMENT OF MECHANICAL ENGINEERING

PhD QUALIFYING EXAM

FORM G2: STUDENT COURSE WORK

The Ph.D. program requires completion of at least 33 credits course work (not including credit for any master's thesis) beyond the Bachelor program.

COURSES FOR GRADUATE CREDIT AT UBC:

COURSE NAME AND NUMBER	INSTRUCTOR	GRADE	CREDIT

COURSES TRANSFERRED FOR CREDIT FROM ANOTHER UNIVERSITY:

COURSE NAME AND NUMBER	INSTITUTION	GRADE	CREDIT

(i) Students having completed a Master's Degree in Mechanical Engineering at a recognized Canadian university can automatically transfer 18 credits. However, the courses taken should still be listed.

(ii) Course credits from other universities can only be obtained with the prior unanimous approval of the student's supervisory committee. Such credits cannot exceed 18 in total. Approved Transfer Credit form (G3) must be attached to form G2.

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PhD QUALIFYING EXAM

FORM G3: CREDIT TRANSFER

This form should be accompanied with:

1) A detailed Course Outline (see complete instruction - #2 in the attached policy)

2) A copy of the transcript for the requested courses

Supervisory Committee Member's:	**Name**	**Initials**
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Minimum of four signatures (including supervisor) are required for approval.

Student's Name: _____ Student's Number: _____

Date: _____

Degree for which credits are being transferred: _____

Number of credits transferred: _____

University from which credit is transferred: _____

Notes:

1. Please review the attached policy carefully.
2. This form is not required if you have completed a MASc degree in UBC-MECH.

Credit Transfer Approved: _____

(Graduate Advisor)

POLICY FOR TRANSFER OF GRADUATE ACADEMIC CREDIT FROM OTHER INSTITUTIONS

1. An application for approval of transfer of academic credit should be made to the departmental Graduate Advisor, and should contain the following elements for each course proposed for transfer:

a) a detailed course outline

b) the number of classroom hours, and the grade obtained

c) the name of the nearest equivalent UBC course, if any

d) an explanation of the relevance of the course to the student's UBC studies and research work.

The burden of providing the required information rests with the student. For PHD candidates, the extent of credit transfer is subject to departmental discretion, and will be decided by the Graduate Advisor after the student's application has been reviewed and approved by the Research Committee. Such transfer will not normally exceed 18 credits.

2. The application should be supported in full by the student's research supervisor and advisory committee.

3. The application will first be assessed and approved by the members of the student's thesis advisory committee before being presented to the graduate advisor. Each committee may ask advice from other faculty members, notably the relevant course instructors. Among the features looked for in order to approve transfer of academic credit for a course are:

a) similarity in standard and content to a UBC graduate course, preferably to a specific UBC graduate course
b) the relevance of the course to the student's area of study and research work
c) achievement in the course to a standard equivalent to a UBC graduate grade of at least 74%.

Standard Transfer Credit Regulations can be reviewed at http://www.grad.ubc.ca/faculty-staff/policies-procedures/transfer-credit

4. In general, approval for transfer of academic credit will not be given when:

a) a course was previously or will be used to fulfill the requirements for the granting of a degree at UBC or elsewhere of equal level to that currently pursued by the student (ie. NO double counting).
b) an equivalent course at UBC would not be acceptable to fulfill UBC requirements for the degree being pursued by the student.