

## **Oral Qualifier – ENGG194**

### *Committee*

The examination committee is constituted based upon suggestions of the advisor, in consultation with the MS-PhD director if desired. The chair is assigned by the director. The advisor may be one of the examiners, but may not chair the committee.

### *Preparation*

There are many ways to structure the preparation for the oral examination. Over the last few years, this has most commonly been the review of three courses, but there are other ways to define the scope of the material to be tested.

The student and the advisor may find other methods more suitable to the student's preparation for PhD candidacy. The most important consideration is that this exam must test the student's comprehension of the ***fundamentals underlying the research***. Some examples follow.

Defining the scope of the exam may be accomplished by various methods including, but not limited to:

- a) Coursework based exam: The advisor chooses a set of courses that are core to the student's program, with either applied mathematics as one of them, or mathematical acumen in a relevant area tested in the context of one of the courses.
- b) Topic based exam: The advisor chooses a set of topics, not defined by the curriculum, but covering the fundamentals of the broad field in which the student is working. In materials science for example, this might include topics such as magnetism, phase transformations, mechanical properties, optical properties of materials, etc. The expectation would be for the selection of three general areas, and examination in applied mathematics within at least one of those.
- c) Literature based exam: **The advisor** chooses a seminal paper in the broad research field of the student, the student reviews this paper orally for the committee, and is tested on the ***underlying principles*** that allowed the author to make the research advance. Knowledge of applied mathematics must be tested, either in the context of the paper, or separately.
- d) Research Concept based exam: The student prepares a description of a research concept *peripheral* to their defined thesis topic. The student would present a brief summary of the background and the idea, and would be tested on the ***fundamental principles*** that lend support to the proposed research. Knowledge of applied mathematics must be tested, either in the context of the proposal, or separately. The proposal idea could be developed further to satisfy the requirements of ENGG 197.

After the student and faculty advisor decide on the scope and preparation method for the exam, the student prepares a half-page summary of the exam format, obtains the signatures of the examiners and the MS-PhD Director. **The Director will assign a Chair and notify you. Following this notification, it is your responsibility to contact the Chair and Examining Committee to schedule the exam. Once you have done this, then submit the signed planning sheet to the Registrar.**

TEMPLATES for oral exam request follow. These are not fill-in the blanks; they are to guide your development of the application.

Coursework based exam

***Student Name:*** \_\_\_\_\_

Advisor Name: \_\_\_\_\_

Student's broad research area: \_\_\_\_\_

Courses to be used as basis for exam (**please underline the one in which applied mathematics will be tested**) *Faculty should initial the courses they will cover*

#1:

#2:

#3:

***Faculty signatures (chair will be assigned):*** \_\_\_\_\_

Advisor

Examiner #1

Examiner #2

(Examiner #3 – if advisor is not an examiner)

Signature of MS-PhD Director Required \_\_\_\_\_

Topic based exam:

***Student Name:*** \_\_\_\_\_

Advisor Name: \_\_\_\_\_

Student's broad research area and likely thesis topic: \_\_\_\_\_

Topics to be used as basis for exam (**please underline the one in which applied mathematics will be tested**) *Faculty examiners should initial the areas in which they are going to examine the candidate*

#1:

#2:

#3:

Etc,

***Faculty signatures (Chair will be assigned):*** \_\_\_\_\_

Advisor

Examiner #1

Examiner #2

(Examiner #3- if advisor is not an examiner)

Signature of MS-PhD Director Required: \_\_\_\_\_

Literature based exam

***Student Name:*** \_\_\_\_\_

Advisor Name: \_\_\_\_\_

Student's broad research area and likely thesis topic: \_\_\_\_\_

*Title of paper, and fundamental concepts covered by it:* Faculty should initial areas in which they will ask questions

The paper to be used will be “skjdldldfj in sldkfjdljf- based research”, by C. Snodgrass. This paper was the first to introduce the use of toituwl-processing of e. absurdum, and relies on the principles of \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_

**Indicate how applied mathematics will be included in the exam, and the faculty member responsible for questions in this area:**

***Faculty signatures (Chair will be assigned):*** \_\_\_\_\_

Advisor

Examiner #1

Examiner #2

(Examiner #3- if advisor is not an examiner)

Signature of MS-PhD Director Required: \_\_\_\_\_

Research Concept based exam

***Student Name:*** \_\_\_\_\_

Advisor Name: \_\_\_\_\_

Student's broad research area and likely thesis topic: \_\_\_\_\_

*Title of research proposal concept, and fundamentals underlying it:* Faculty should initial areas in which they will ask questions

The concept is the use of bristle-brushes for seeding the growth of biofilm. This concept builds on the use of toituwl-processing of e. absurdum, and relies on the principles of \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_

*Indicate the distinction between this and the thesis topic as presently defined.*

**Indicate how applied mathematics will be included in the exam and the faculty member responsible for questions in this area:**

***Faculty signatures (Chair will be assigned):*** \_\_\_\_\_

Advisor

Examiner #1

Examiner #2

(Examiner #3- if advisor is not an examiner)

Signature of MS-PhD Director Required: \_\_\_\_\_