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## GUIDELINES FOR PH.D. QUALIFYING EXAMINATIONS

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### 1. PURPOSE

A graduate student must successfully complete Ph.D. qualifying examinations to be admitted to Ph.D. candidacy. The Ph.D. qualifying examinations are administered sequentially and include:

1. Written assessment of the student's knowledge of the principles and techniques in engineering
2. Oral assessment of the student's knowledge of the principles and techniques in engineering
3. Oral presentation of the Ph.D. research proposal (Dissertation Proposal Defense)

The purpose of this document is to provide general guidelines regarding the first two parts (written and oral assessments). The brevity of the document is deliberate, as the intent is to provide a modicum of structure and simultaneously allow substantial flexibility by each student's Supervisory Committee.

Unless otherwise noted, a student's Supervisory Committee may stipulate different requirements or limitations regarding Content, Format, and Grading.

If a conflict exists between this document and the Academic Bulletin, the Graduate School's Academic Bulletin shall take precedence followed by the CAE Graduate Academic Bulletin.

### 2. ADMINISTRATION

The written and oral assessments are typically administered within one calendar year of the student's admission into the graduate program. Students are responsible for contacting their Advisor to initiate and schedule the assessment process. It is also the student's responsibility to request, in a timely manner, any necessary accommodations due to special needs; students must be registered with the Office of Disability Services (ODS).

### 3. CONTENT

The assessments' content and format are formulated by the Supervisory Committee to test the student's knowledge of the assumptions and limitations of the engineering theory, the basis and derivation of the governing equations, the solution of fundamental and advanced problems, and the interpretation of the solution. The student is responsible for interacting with the Supervisory Committee to identify the primary topical areas that may be assessed on the written and oral assessments.

### 4. FORMAT

The specific formats are determined by each Supervisory Committee and typically include questions that are (1) multiple-choice, (2) true/false, (3) short answer, (4) computational, and/or (5) essay.

#### 4.1 WRITTEN ASSESSMENT

The written assessment is typically in-class, closed-book, closed-notes, and lasts up to 4 hours. Unless otherwise permitted by the student's Supervisory Committee, the following requirements apply:

- Formula sheets, additional paper, reference books, or other materials are prohibited.
- All testing materials must be returned to the Supervisory Committee once the allotted time has expired.
- Students may only use pencils, a protractor, and a ruler or straightedge.
- Only calculators approved by the National Council of Examiners for Engineering and Surveying ([NCEES](#)) are permitted for use on the examination.
- Other than an approved calculator, no other electronic devices are permitted. Cellular phones are not permitted in the examination room.
- Sharing of calculators, batteries, and other materials is not permitted.
- Bathroom/smoking breaks are not permitted.
- Food and drink are not permitted.

#### 4.2 ORAL ASSESSMENT

The oral assessment is typically scheduled after the written assessment has been graded. The student and the Supervisory Committee are permitted to attend the oral assessment, which typically lasts up to one hour.

The student may be asked to solve problems on a whiteboard, blackboard, or use some other medium for drawing figures or diagrams. The student should not need to prepare a formal presentation (i.e. PowerPoint) for the oral assessment.

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## 5. GRADING

### 5.1 WRITTEN ASSESSMENT

Unless otherwise noted on the examination sheet (or by the Supervisory Committee):

- All questions and problems on the written assessment will be weighed equally.
- A final score of at least 70% constitutes passing of the written assessment.

### 5.2 ORAL ASSESSMENT

The grading criteria utilized by the Supervisory Committee to assess performance on the oral examination will many include factors such as:

- Knowledge of the discipline
- Problem-solving methodology
- Effective oral communication (conversation dynamics, clarity of message, and vocabulary)

Unless otherwise noted by the Supervisory Committee:

- Each criterion is not necessarily weighed equally.
- A final score of at least 70% constitutes passing of the oral assessment.

### 5.3 OVERALL SCORE

In accordance with the CAE Graduate Bulletin, the final grade for each assessment component is either: *Pass*, *Fail*, or *Fail with option to retake once*. Failing the written assessment constitutes a failing grade for the entire qualifying examination; the oral examination will not be permitted until the written examination is passed.

## 6. QUESTIONS

Students should direct questions regarding this process to their Advisor and/or the CAE Graduate Program director.