Procedures for Doctoral Candidacy Examinations

Doctoral Program in Computer Science
Ryerson University

Contents

The Candidacy Examination Process

The purpose of the candidacy examination is to determine whether the doctoral student has the appropriate knowledge and expertise to undertake a dissertation in the selected field or area of study.

As stipulated in the Yeates School of Graduate Studies (YSGS) policy[1], every Doctoral program requires that a student complete a preparatory or foundation phase before a research program may be attempted. In the Computer Science Doctoral program this takes the form of a qualification examination that, if successfully completed, results in the student becoming a Doctoral Candidate.

The examination occurs in two parts which must be taken in sequence and will require approximately five (5) weeks to complete. These parts are:

1. A **written** examination of the student's *breadth* of knowledge within the discipline of Computer Science based primarily on graduate courses successfully completed by the student.

2. An **oral** examination of the *depth* of the student's knowledge as expressed in their research proposal and the breadth of their knowledge as expressed in the answers to the written examination.

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[1]"GRADUATE ADMISSIONS AND STUDIES POLICY", The Yeates School of Graduate Studies, Ryerson University, Section C, Para. 8, http://www.ryerson.ca/senate/policies/pol142.pdf

The Candidacy Examination is to take place **no earlier than the 2nd year** and **no later than the end of the 3rd year of student registration in the program**.

Beginning the examination process

The examination process must be initiated **at least five (5) weeks prior** to the intended date of the oral examination.

The process of examination begins with the creation, and Supervisor approval, of a written research proposal in the appropriate format[2], consisting of at least the following four headings:

i) **Recent Progress**
Describe one's own recent progress in research activities related to the proposal.

ii) **Objectives**
Define the short- and long-term objectives of the research program.

iii) **Literature Review**
Discuss the literature pertinent to the proposal, placing the proposed research in the context of the state-of-the-art within the accepted literature.

iv) **Methodology**
Describe the methods and proposed approach, providing sufficient details to allow the examination committee to assess the feasibility of the research activities. Significant milestones should be identified.

v) **Impact**
Explain the anticipated significance of the work. It is expected that, in part, this section will address publications anticipated stemming from the proposed research.

At least 5 weeks prior to the proposed date of the oral examination, the student's Supervisor will assemble a committee of two (2) other examiners (the Examination Committee) drawn from members of the student's supervisory committee and other Faculty members of the Computer Science Doctoral program. The Program Director (or designate) will act as the non-voting chair of the committee for a total of four (4) members[3,4,5].

The student's Supervisor will formally initiate the process of the Examination by submitting the form "***Candidacy Examination Request Form***" which will stipulate;

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[2] The proposal should follow the format stipulated by Natural Science and Engineering Research Council (NSERC) in their Discovery Grant proposal instructions, which can be found at http://www.ryerson.ca/science/programs/graduate/computerscience/forms/NSERC_Proposal.pdf.
[3] The Supervisor will consult with the Program Administrator to find a suitable date for the examination and arrange for a suitable examination location..
[4] If special expertise is required, one (1) examiner from outside the program may be selected to serve on the examination committee.
[5] A Co-Supervisor is automatically a member of the examination committee.

- who is on the Examination Committee,
- the proposed date and place of the oral examination
- the name of the student,
- the date by which the student may receive the written examination (see below)
- the date by which the student must return the written examination, and
- other pertinent information.

The student will provide each member of the Examining Committee a physical copy of the research proposal.

Part 1: The Written Examination

The written examination is designed to ascertain a student's understanding of the basic theories, and recent developments of both a theoretical and applied nature, in his/her field or area of study. This understanding must exhibit both articulate comprehension and critical exposition.

At least four *weeks prior to the oral examination*, the Program Administrator shall provide the Examination Committee with a list of graduate courses the student has taken in both the student's Masters and Doctoral programs.

Each voting member of the committee shall devise a question drawn from the general topic areas of these courses and provide appropriate references for the student.

The Chair of the Examination Committee, in consultation with the committee members, shall determine the suitability of each question along with the available reference material to ensure that the questions are appropriate, of sufficient complexity and answerable within one week. Duplication of questions must be avoided.

Three weeks prior to the examination, two (2) questions shall be drawn at random from the available questions (3) by the student in the presence of the Program Administrator.

> **Written Question Guidelines**
> - Each question must be drawn from peer-reviewed literature.
> - Suggested reference materials must be readily available to the student
> - Each question should require the student to: analyze, address the literature, and express insight into the nature of the question.
> - Questions to avoid multiple parts where possible. If multiple parts are necessary, they should be closely related.

The student shall have one week to familiarize themselves with the questions and relevant reference material and answer the questions in writing.

Two weeks prior to the oral examination the student will provide his/her written answers[6] to the examination questions to each member of the Examination Committee and the Program Administrator.

The members of the committee shall mark their respective question using the rubric provided in the table below.

Table 1 Rubric for marking examination questions

Mark	Guidance
0	The student substantially failed to answer the question
1	The answer provided was incorrect
2	The answer provided was mostly incorrect but some insight was shown into the problem posed by the question
3	The answer provided addressed the question and began to answer it showing some insight into the problem
4	The answer provided was substantially correct with some definable deficiency and showed good insight into the problem
5	The answer provided was correct

Preliminary Evaluation of the Written Examination

Marks should be sent to the student's Supervisor who will compile them for delivery to the Program Director who is responsible for recording the total mark on the form "***Results of Candidacy Examination***"[7] in the section marked "*Written Examination: Preliminary Mark*".

The student will be considered to have passed the written examination if they achieve over 50% of the available marks.

One week prior to the oral examination the marked questions, with commentary from the markers, will be provided to the student who will be asked to address the comments during the oral examination, providing explanation, and clarification as necessary.

Part 2: The Oral Examination

On the examination day, the student will make an oral presentation of approximately 30 minutes to the committee that provides;

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[6] Written answers may take the form of an electronic document, preferably saved in the Portable Document Format (PDF).

[7] This form shall be used to record all marks stemming from the Candidacy Examination and therefore contains multiple sections.

- a synopsis of the answers the student gave to the written examination addressing the commentary provided by the markers[8], and
- an overview of the research proposal—addressing each sub-topic of the proposal separately.

The presentation will be followed by two (2) rounds of formal questions from the committee. The first round of questions will relate to the written examination[9]. The second round will relate to the research proposal[10]. A third round of questions may be allowed by the committee Chair if necessary.

Once the final round of questioning is complete the student will be asked to leave the room while deliberations take place by the committee.

Determining the Outcome of the Candidacy Examination

The Candidacy Examination consists of two parts and therefore must be evaluated in two parts (as discussed in the sections below) and recorded on the form.

Final Evaluation of the Written Examination

The committee shall deliberate the presentation made by the student with regard to the written examination and determine if the additional information provided in any way modifies the preliminary marks assigned.

When the committee has decided what the final mark shall be for the written examination, the result shall be recorded in the section "*Written Examination: Final Mark* "as "pass" or "fail".

Evaluating the Oral Examination

The committee shall deliberate the presentation made by the student with regard to the research proposal and the proposal itself. If the committee finds the proposal satisfactory[11] a mark of "pass" will assigned and recorded in the section "Oral Examination: Final Mark". Otherwise the student will be assigned the mark "fail".

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[8] The student need not address the written examination at all if a passing mark was achieved for the examination however, each committee member has the right to ask about any part of the written examination at their discretion.

[9] The student may be asked to expand ideas, cover missing information or insight into the problems posed during the written examination. Committee members need not ask questions in this round if they are satisfied with the student's answers.

[10] A basic premise of the examination is that the research must result in work of either publishable quality (in a recognized peer reviewed venue), or patentable material, or both.

[11] A student may be granted a "pass" even though some small weaknesses are identified -- if it is considered that these may be remedied quickly. In such cases, a plan of remediation is to be designed by Supervisor and student, and satisfactory completion of the plan is to be attested by the Program Director in writing by checking the box on the form: "All required changes have been completed" and signing where appropriate.

Determining Candidacy

1. ***If the student receives a passing mark in both the written and oral components of the candidacy examination, he/she will immediately become a Candidate in the Doctoral program***, this will be recorded on the form which will be kept in the candidate's file.

2. ***If student has failed their second attempt to pass the qualifying exam they will be asked to immediately withdraw***. Otherwise she/he will have their failure recorded and given a maximum of 1 term to prepare for another examination consisting of the part(s) of the candidacy examination which were failed in the current attempt.
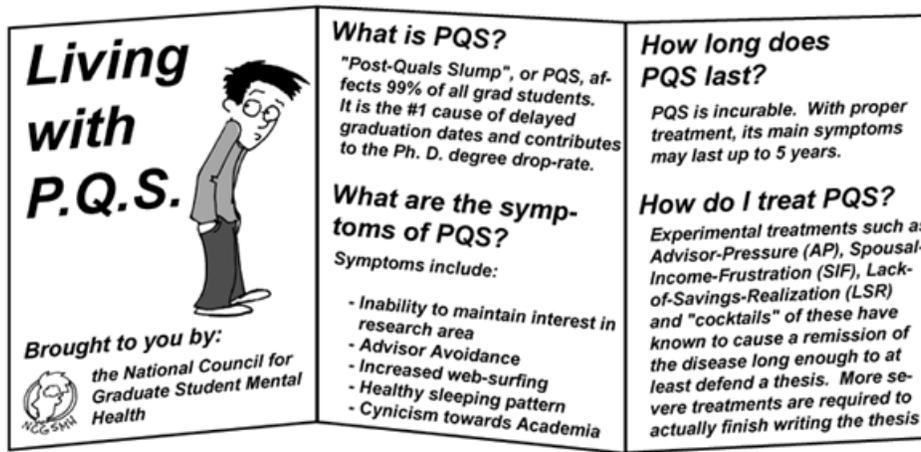
Living with P.Q.S.

Brought to you by:
the National Council for Graduate Student Mental Health

What is PQS?
"Post-Quals Slump", or PQS, affects 99% of all grad students. It is the #1 cause of delayed graduation dates and contributes to the Ph. D. degree drop-rate.

What are the symptoms of PQS?
Symptoms include:

- Inability to maintain interest in research area
- Advisor Avoidance
- Increased web-surfing
- Healthy sleeping pattern
- Cynicism towards Academia

How long does PQS last?
PQS is incurable. With proper treatment, its main symptoms may last up to 5 years.

How do I treat PQS?
Experimental treatments such as Advisor-Pressure (AP), Spousal-Income-Frustration (SIF), Lack-of-Savings-Realization (LSR) and "cocktails" of these have known to cause a remission of the disease long enough to at least defend a thesis. More severe treatments are required to actually finish writing the thesis

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[12] http://compthis.blogspot.ca/