The University of Calgary Doctoral Candidacy Regulations ("the Regulations") govern the conduct of admission to candidacy at the University of Calgary. This document establishes program-specific requirements associated with the conduct of admission to graduate candidacy in Computer Science under the Regulations.

A  STATEMENT OF PURPOSE

Admission into candidacy in the Computer Science Graduate Program signifies that the student is prepared and competent to undertake PhD level research in a field in Computer Science. The candidacy examination assesses the student’s preparation in subjects relevant to the general field of Computer Science and the specific field of planned research, as well as his/her research potential.

B  REQUIREMENTS AND TIMELINE

All doctoral students in the Computer Science Graduate Program must successfully complete the following components:

1. Course requirements as stated in the Graduate Calendar.

2. A Field of Study (FOS) written examination. The written exam consists of a literature review that the student prepares in consultation with the Supervisor(s) and is evaluated by the student’s Supervisory Committee.

3. A thesis proposal oral examination based on a written thesis research proposal. The student must have submitted the thesis proposal when the thesis oral exam is scheduled. The thesis proposal provides the focus for questions related to the candidate's thesis topic.

All candidacy requirements must be completed within 28 months for students with a completed MSc and within 36 months for students with a Bachelor’s degree or those who transfer to a doctoral program before completing an MSc.

C  FOS WRITTEN EXAM

The intent of the FOS written exam is to assess the student’s preparedness to conduct research at the PhD level. PhD students in Computer Science demonstrate their preparedness by conducting a survey of their field of research and preparing a literature review written in a scholarly format. The following guidelines should be observed when preparing the literature review.
C.1 LITERATURE REVIEW GUIDELINES

The purpose of the literature review is to demonstrate depth of knowledge in the student’s research area. It lays the groundwork for the student’s thesis research questions and the thesis proposal. The review will be considered the FOS written exam of the candidacy requirements. It must be the student’s own work. However, students are encouraged to consult with their supervisor(s) in order to establish a suitable context and scope.

The literature review should be prepared in 12-point font, double-space format, and should be 20 pages maximum in length, including all figures, tables and references.

The literature review usually covers three areas. Each area must be highly relevant to the student’s research topic and cover essential material the student must know to pursue his/her research. Depending on the student’s research area, various formats are possible, including Progressive Depth, Cross-area Breadth, Cross-area Breadth and Progressive Depth. In general, when there is a choice, Progressive Depth reviews are preferred over Cross-area Breadth ones.

**Progressive Depth.** The three sections of the literature review focus on the following respectively:

- Breadth of sub-discipline
- Specialization within that sub-discipline
- Highly specialized area specific to the research topic

**Cross-area Breadth.** If the student’s research is at the intersection of several sub-disciplines of Computer Science, then the three sections of the literature review may cover those sub-disciplines:

- Breadth of sub-discipline A
- Breadth of sub-discipline B
- Breadth of sub-discipline C

**Cross-area Breadth and Progressive Depth.** Combinations of Cross-area Breadth and Progressive Depth are possible, as a student’s research may be at the intersection of two sub-disciplines.

- Breadth of sub-discipline A
- Breadth of sub-discipline B
- Specialization within a combination of A and B
C.2 EVALUATION PROCESS

The FOS written exam shall be evaluated within three weeks of receiving the literature review document. A formal evaluation meeting chaired by the Supervisor shall be scheduled with the student and the Supervisory Committee. The committee members provide constructive feedback to improve the student’s scholarly skills. Each committee member, including the supervisor(s), gives a vote of 'Pass' or 'Fail' based on their evaluation of the FOS written exam. The voting process yields one of the following outcomes for the evaluation meeting:

- “Pass” – The Supervisory Committee unanimously agrees that the student has demonstrated a satisfactory understanding of the background and literature related to his/her research area. The literature review meets or exceeds the quality requirements expected of a scholarly article in the student’s area of research.

- “Fail” – The Supervisory Committee unanimously agrees that student has failed to demonstrate sufficient knowledge of the area of research and/or communicate it effectively.

- “Lack of Unanimity” - The Supervisory Committee failed to reach a unanimous decision.

In the cases of "Fail" or "Lack of Unanimity", each committee member must provide to the Graduate Program Director, within five working days, a written report explaining the reasons for their vote.

In case of a "Lack of Unanimity", the final decision will be in the hands of the Graduate Program Director. The Graduate Program Director, after reviewing the report(s) will summarize and convey the final decision of either "Pass" or "Fail" to the student.

In case of a "Fail", the Graduate Program Director, after reviewing the report(s) and consulting with the Supervisor, will provide to the student and the Supervisor a list of concerns that the student must address.

If the Graduate Program Director is one of the Supervisory Committee members, the fail case should be handled by the Assistant Head of Existing Graduate Students.

The student can retake the FOS written examination no sooner than two months and no later than six months from the failed examination date. The FOS written examination retake involves revaluation of a revised literature review by the Supervisory Committee. Only one re-take of the FOS written is permitted and in case of a second “Fail”, the student will be required to withdraw from the program.

D THESIS PROPOSAL ORAL EXAMINATION

The thesis proposal oral examination is based on a written thesis research proposal. The thesis proposal is submitted by the student after successfully passing the FOS written exam.
D.1 THE WRITTEN THESIS RESEARCH PROPOSAL

The written research thesis proposal should be prepared in 12-point font, double-space format, and should be less than 30 pages, including all figures, tables, and references. An optional Appendix can be included at the end of the proposal and is exempt from the page limit. However, the student should keep in mind that the examiners may or may not choose to read the Appendix, and therefore the thesis proposal itself must be self-contained. A suggested structure of the thesis proposal is outlined below.

A. Up to 5 pages for describing the research project, and its background and motivation. The student should articulate the relevance of the project, review important related literature so that a reader can put the project in context. Note that an exhaustive review of the related literature is not required at this stage.

B. Around 10 pages for describing the proposed research in detail, including research methodology, the student’s existing progress, and proposed timeline for completing the research.

C. Up to 5 pages for conclusion and references, as well as an optional discussion of possible, original extensions to the research described in this proposal, which may not necessarily be pursued as part of the PhD project.

The Supervisor and Supervisory Committee should work with the student to arrive at a thesis proposal that the Supervisory Committee believes is ready for examination; however, the student has the right to proceed without the Supervisory Committee’s agreement. It is the responsibility of the student to submit a completed thesis research proposal before setting the date of the Thesis proposal oral exam.

D.2 SCHEDULING OF THE THESIS PROPOSAL ORAL EXAMINATION

The thesis proposal oral examination needs to be scheduled at least three weeks before the exam date.

When the thesis proposal oral examination is scheduled, the student/Supervisor needs to submit the thesis research proposal to the Graduate Program Assistant of the department. The student and the Supervisor need to sign the notice of the thesis proposal oral exam form.

D.3 COMPOSITION OF THE THESIS PROPOSAL ORAL EXAMINATION COMMITTEE

The thesis proposal examination committee consists of the Supervisory Committee plus two additional members who have no conflict of interest with the student or the Supervisor. Each of the two additional members can be either internal or external to the Department of Computer Science.

Neutral Chair: A member of the academic staff appointed by the Graduate Program Director chairs the examination. The Neutral Chair is not a member of the examining committee and is non-voting.
D.4 Thesis Proposal Oral Examination Process

The exam begins with a 20-minute presentation by the student where they highlight the objectives of the proposed research. This is followed by rounds of questions from the examination committee. Only members of the examination committee are allowed to question the student. All examiners will be given an opportunity to question the student. Normally two rounds of questions within a 2-hour time frame are sufficient; however, more questions can be accommodated if deemed necessary by the committee members, and if time permits.

Questions to the student should be clear and succinct. The student should be given reasonable time to answer. If the student has understood the question and cannot answer, the examiner should pass to another question and not attempt to extract an answer by prolonged interrogation, or by leading the student. The neutral chair should guard against any tendency of examiners to interact with each other instead of concentrating on the examination of the student.

At the end of the exam, the student is asked to withdraw from the room. The committee first gives its preliminary recommendation, through an anonymous straw vote, of Pass or Fail on the thesis proposal oral examination. The voting result provides the committee a frame of opinion upon which to deliberate about the student’s performance during the exam. After a full post-examination discussion, Committee Members are to provide their final recommendations of "Pass" or "Fail" on the student’s performance in the oral examination. The Supervisor is a voting member. The neutral chair is a non-voting member.

If the outcome of the final vote of the oral exam includes at most one negative vote, then the student passes the exam and is advanced to the category of "Candidate for the PhD" in the Computer Science Graduate Program.

If the final vote results in 2 or more “Fail” votes, the committee’s recommendation on this component is “Fail”. Within five working days of the failed examination, the Neutral Chair must submit a written report of the procedures, and each committee member must also provide a written report explaining the reasons for their vote, to the Graduate Program Director. The final decision will be at the discretion of the Graduate Program Director. Then, after consultation with the Supervisor, the Graduate Program Director summarizes the essential points and the final decision to the student. Should the Graduate Program Director uphold the recommendation of "Fail", the candidate will have a second opportunity to take the thesis proposal oral examination.

If the Graduate Program Director is one of the examination committee members, the fail case should be handled by the Assistant Head of Existing Graduate Students.
D.5 RETAKE OF THESIS PROPOSAL ORAL EXAMINATION

Only one re-take of the thesis proposal oral examination will be permitted. The re-take must take place no sooner than two months and no later than six months from the date of the first examination. The composition of the examination committee normally will remain the same. However, upon the recommendation of the Graduate Program Director and approval of the Faculty of Graduate Studies, an examiner may be replaced.

E APPEAL OF FAILED EXAMINATION

Students who fail either the FOS Written Examination or the thesis proposal oral examination may appeal the decision in writing directly to the Faculty of Graduate Studies (see Academic Regulations in the Graduate Calendar, section on Appeals – Appeals Against Faculty of Graduate Studies Rulings).