The University of Calgary Graduate Candidacy Regulations (“the Regulations”) govern the conduct of admission to graduate candidacy at the University of Calgary. This document establishes program specific requirements associated with the conduct of admission to graduate candidacy in chemistry under the Regulations.

A. Statement of Purpose
Admission into candidacy in the Chemistry Graduate Program signifies that the student is able to critically think about their research project and evaluate its merits in the context of the broader field of chemistry and society as a whole. It requires that students synthesize a viable well-planned research proposal with the potential to lead to a doctoral degree, and demonstrate a comprehensive knowledge of the specialized subject matter involved in it and the essential General Chemistry fundamentals that underpin it. Students who fulfill the candidacy requirements in Chemistry have a deeper, advanced understanding of Experimental and/or Theoretical Chemistry, and the necessary knowledge and technical skills to continue research at the doctorate level.

B. All doctoral students in the Chemistry Graduate Program must successfully complete the following components:
1. All course requirements prior to attempting the Candidacy Field of Study (FOS) Oral Examination identified in #3 below. Note that seminar requirements continue throughout the degree program and need not be completed prior to attempting the exam.

2. A written thesis research proposal that is evaluated and approved by the Candidacy FOS Oral Examination committee and forms the basis for admission to and questioning in a subsequent Candidacy FOS Oral Examination as identified in #3 below.

3. A Candidacy FOS Oral Examination that is based on the written thesis research proposal identified in #2 above.

Scheduling of the Candidacy FOS Oral Examination
A Chemistry doctoral student must take the Candidacy FOS Oral Examination no later than 22 months after their first registration in the Faculty of Graduate Studies. The first annual meeting may also act as a pre-examination meeting (see below), otherwise, a separate pre-examination meeting must be held normally within 12 months but prior to 18 months in program.

Composition of the Candidacy FOS Oral Examination Committee
A neutral chair will chair the examination. The examination is conducted by an approved Candidacy FOS Oral Examination committee. It will consist of the supervisor, the supervisory committee members, an additional examination committee member, and an additional internal/external examination committee member. The supervisor is required, in consultation with the student, to choose the additional faculty members to become part of the committee. All members, except the internal/external examiner, must attend the pre-examination meeting (see below). The internal/external examiner does not have to be
identified at the time of the pre-examination meeting nor be in attendance at this meeting, but may be if desired. The internal/external examiner may be, but is not required to be, external to the department. The internal/external examiner must have expertise that is at arm’s length from the candidate’s research area and they must meet the criterion outlined by the Faculty of Graduate Studies. A neutral chair will be assigned by the Graduate Program Director for the Candidacy FOS Oral Examination.

**Format of the Pre-Examination Meeting**

Normally, within 12 months of first registration as a Ph.D. student, the supervisor will organize a pre-examination meeting of the Candidacy FOS Oral Examination committee and the student. There they decide, in conjunction with the student, the sub-discipline(s) the student will be examined on during the Candidacy FOS Oral Examination (i.e. organic, inorganic, physical, analytical, polymer, theoretical, etc., or a combination thereof). It is expected that the committee will identify relevant subject matter, text books, literature, etc. necessary for the student to prepare for the examination. This meeting can also be treated as one of the annual meetings of the Supervisory committee with the student.

The supervisor will complete, in conjunction with the student and committee at the pre-examination meeting, the “Pre-Candidacy Examination Form”, listing both the topics for examination but also the levels of understanding which will be expected. Topics should be indicated at a level of specificity such as, for example, ‘kinetics at a third year level’ rather than simply ‘physical chemistry’, or ‘theory and practice of NMR’ rather than ‘characterization techniques’.

To facilitate this meeting, the candidate will submit a hard copy draft (minimally 10-pages) of their 25-page written thesis research proposal (see next section for complete formal requirements) to their committee at least 7 days prior to the pre-examination meeting. Initial feedback at the meeting is used by the student to revise this into their final version of the written thesis research proposal, which is to be given to the committee at least 30 days prior to the date of the Candidacy FOS Oral Examination. Both the draft and final proposal are to be written in 12 point font and double spaced (see below).

The candidate will submit within one week of the pre-examination meeting a “Timelines” form (http://www.ucalgary.ca/chem/grad/forms) to the department graduate office. A minimum of five weeks prior to Candidacy FOS Oral Examination, the student/supervisor will provide to the department graduate office final details of the student’s examination arrangements using the “Oral Examination Arrangement” form.

**Format of the Written Thesis Research Proposal**

The student will prepare the final version of their written thesis research proposal and submit hard copies to their supervisor and the Candidacy FOS Oral Examination committee (including neutral chair) at least 30 days prior to the exam. The student will also provide the departmental graduate studies office with a hard copy of the proposal.

The student’s proposal must be written according to the following guidelines:

1. The proposal is limited to a maximum of 25 pages, including figures, diagrams, structures etc. (excluding references). It is to be typed and double spaced in 12 point font.
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2. Roughly **10 pages** of the proposal should be devoted to describing the relevance of the
   project and a thorough background of the research and literature that forms the basis of
   the proposal.

3. The **next 10 pages** should describe the proposed research in detail including any relevant
   results and how specific techniques or experiments will answer specific questions.

4. The **final 5 pages** will be reserved for an original extension of their project put forth by
   the candidate. These concepts will not necessarily be pursued as part of the Ph.D. project
   but are more meant to assess the candidate’s ability for original thought.

   *All of these elements must be included in the proposal. Failure to do so may render the proposal
   incomplete and necessitate postponement of the student’s exam until the proposal is revised to
   completion. See below for more information.*

There is no requirement that, for the completed thesis, all the proposed research be successfully carried
out. Conversely, completion of the proposed research will not necessarily signify that all thesis-related
research requirements have been met.

**Evaluation of the Written Thesis Research Proposal**

At least ten days prior to the Candidacy FOS Oral Examination, the Candidacy FOS Oral Examination
committee, including the supervisor, will prepare feedback on the proposal and give it a formal
evaluation of Pass or Fail. The Neutral Chair does not evaluate the proposal. This grade is based on the
student’s ability to successfully follow the required format of the proposal and to articulate the various
aspects of each required component. As such the committee is encouraged to provide critical feedback
to improve the student’s scientific writing and thinking. The committee will submit this feedback to the
supervisor. Once collected, the supervisor will circulate this feedback to all committee members and
the graduate studies office. The feedback should be sufficient in length and detail to assist the
supervisor in discussion with the student, and to offer guidance to the student.

The majority opinion of the committee vote, either Pass or Fail, determines the outcome.

In the event of a Fail, the student must revise and resubmit their written thesis research proposal in
accordance with the feedback, and postpone their Candidacy FOS Oral Examination until the written
thesis research proposal is successfully completed. The student may resubmit a revised version of their
written thesis research proposal no sooner than two weeks after receiving the previous decision.

In the event of a Pass, the student will proceed to the Candidacy FOS Oral Examination (see below). At
least seven days before the Candidacy FOS Oral Examination, the supervisor will meet with the student
to provide feedback to them (i.e. in the form of paraphrased and not verbatim comments) on the
written thesis research proposal and identify any major deficiencies.
Appeal to a Failed Written Thesis Research Proposal
Students who fail the written thesis research proposal may appeal the decision in writing to the Faculty of Graduate Studies. Please see the Faculty of Graduate Studies Calendar, section N. Appeals – N.2 Appeals Against Faculty of Graduate Studies Rulings.

Format of the Candidacy FOS Oral Examination
The exam is comprised of rounds of questions from the examination committee to the candidate. Only members of the examination committee are allowed to question the candidate. All examiners will be given an opportunity to question the candidate. Normally two rounds of questioning within a 2 hour timeframe is sufficient, however more is possible if deemed necessary by the committee members. The exam should not exceed 3 hours.

Questions during the early part of the oral examination should focus on details and background related to the written thesis research proposal, and then may extend to an examination of the student’s general background knowledge in the sub-discipline(s) of chemistry previously discussed with the student.

Questions to the candidate 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 candidate. The chair should guard against any tendency of examiners to interact with each other instead of concentrating on the examination of the candidate.

At the end of the examination, the student is asked to withdraw from the room while the committee deliberates on the candidate’s performance on the exam. Before any discussion of the candidate’s performance, each examiner must give their preliminary recommendation of Pass or Fail by secret ballot. This provides the committee a frame of opinion upon which to base a full discussion of the student’s performance. The examiners then conduct a post-examination discussion, where each is to give their input on the student’s performance. Upon the final vote, each examiner must declare a recommendation of Pass or Fail on the student’s performance. The supervisor is a voting member. The neutral chair is a non-voting member. Every effort should be made to reach a unanimous recommendation. The result is communicated to the student directly after the examination.

A successful Candidacy FOS Oral Examination is one where the student is able to clearly demonstrate mastery over the subject matter on which they have been questioned and critical thinking in the fundamental areas that underpin their research proposal.

During the committee discussion, should certain points be raised where the student requires improvement, remedies should be proposed and these noted on the “Candidacy Examination Feedback” form. This form is not required for all outcomes but is recommended in cases where members of the
committee would like a record of suggestions. This form requires student, supervisor, and Graduate Program Director signatures as acknowledgment that remedial action will take place.

During the Candidacy FOS Oral Examination process teaching duties, or appropriate alternate arrangements for them, must be maintained. With the exception of the three weeks immediately preceding the Candidacy FOS Oral Examination, research responsibilities must be fully maintained.

Evaluation of the Candidacy FOS Oral Examination
A “Pass” on the Candidacy FOS Oral Examination advances the student to the category of "Candidate for the Ph.D." in the Chemistry Graduate Program.

If the committee evaluation results in 2 or more “Fail” votes, the committee’s recommendation 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.

Appeal to a Failed Candidacy FOS Oral Examination
Students who fail the Candidacy FOS Oral Examination may appeal the decision in writing to the Faculty of Graduate Studies. Please see the Faculty of Graduate Studies Calendar, section N. Appeals – N.2 Appeals Against Faculty of Graduate Studies Rulings.”

In the event that the recommendation is to uphold the decision of "Fail", the student can be allowed one re-take of the examination as per below.

Re-Take of the Candidacy FOS Oral Examination
Only one re-take of a candidacy 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. Normally the composition of the examination committee will remain the same. In reporting the results of the re-taken Candidacy FOS Oral Examination, the committee will again be limited to recommending either a Pass (i.e. no more than one negative vote) or Fail. A recommendation of "Fail" requires that, within five working days, each examiner must submit a confidential written report to the Graduate Program Director, detailing the reasons for their vote. The Neutral Chair must also submit a written report of the examination procedures to the Graduate Program Director in that time. If the Graduate Program Director upholds the recommendation to fail, the student will be required to withdraw from the Faculty of Graduate Studies and this decision will be communicated to the Dean of Graduate Studies.
An Overview Guide* of the Candidacy Examination Process

1. Student announces intention to sit the exam ~12 months into program
2. Examination Committee is formed
3. Student writes draft of research proposal
4. Pre-Examination Committee Meeting is Held ~ 12 – 16 months in program
5. Student studies and writes final version of research proposal
6. Student submits research proposal to committee 30 days prior to examination
7. Proposal is evaluated 10 days prior to examination
8. If it passes, student proceeds to oral examination. If it fails, student rewrites it until it is passed
9. Oral examination is held (no later than 22 months in program)
10. Outcome is determined

*This is only a guide, for specifics on the process please see internal document.