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1. **INTRODUCTION**

This handbook attempts to consolidate all departmental regulations and guidelines. Faculty of Graduate Studies regulations, including the Handbook of Supervision and Examination, and the Assistantship Schedule are available at [http://www.grad.ucalgary.ca/current/managing-my-program](http://www.grad.ucalgary.ca/current/managing-my-program). Graduate students and research supervisors should familiarize themselves thoroughly with the graduate program requirements, and the regulations and guidelines outlined in these documents.

The graduate programs are under the coordination of the Associate Head of Graduate Studies in Chemistry, and all matters of administration concerning graduate studies and graduate students in Chemistry are handled from the Graduate Studies Office, SA 229.

2. **SUMMARY OF DEPARTMENTAL REQUIREMENTS FOR THE M.SC. AND PH.D. DEGREES**

(1) Registration: September, or January or May, depending upon date of entry. That month is the student’s annual registration month for the duration of his/her program. New students register for courses after consultation with the Host Supervisor and/or the Director of Graduate Studies (see Section 3.1).

(2) Courses: Students entering the M.Sc. program will be required to take three (3) half courses at the graduate level (500 and above).

(3) Students entering the Ph.D. program holding a B.Sc.(H) degree will be required to take four (4) half courses.

(4) Students entering the Ph.D. program holding an M.Sc. degree will be required to take a minimum of one (1) half course, and a maximum of four (4) half courses. The number of half courses required will be determined by the student's background in relation to area of interest, and in consultation between the student, the Host Supervisor and the Director of Graduate Studies.

(5) Students transferring into a Ph.D. from an M.Sc. program will be required to take four (4) half courses, including those already taken in their M.Sc. program.

(6) Maximum of two of the graduate level half courses may be an Independent Study course (see Section 3.4).

(7) Seminars: Attendance at research seminars (Chem 601/603) of the Department is required in all years of Graduate programs (see Section 3.4). Registration is required in the first year only, as students will receive a credit grade (CR) on their transcripts once each for 601 and 603.

(8) Research for Thesis: Students must choose their major field and supervisor by the beginning of the second term, that is, four months after the date of first registration.

(9) Candidacy Examination (M.Sc. program only): **This must be taken within twenty-two (22) months of first registration in the Faculty of Graduate Studies.** For detailed regulations see Section 3.6 and Appendix 1.

(10) Candidacy Examination (Ph.D. program only): **This must be taken within twenty-two (22) months of first registration in the Faculty of Graduate Studies.** For detailed regulations see Section 3.7.

(11) Completion of Thesis.

3. DETAILED DEPARTMENTAL PROGRAM REGULATIONS

3.1 Registration

For new graduate students, registration in courses is based on discussions with the student and their supervisor, and the Director of Graduate Studies.

3.2 Thesis Research

Thesis research is the most important part of the Ph.D. program. Research projects for M.Sc. degrees have a more limited scope than Ph.D. projects, and are designed to be completed in a considerably shorter period of time. The research findings are generally presented at scientific meetings and/or published in the open scientific literature. It is customary that available results are published before the project is entirely completed and before the thesis is written.

Students are urged to commence their research as soon as possible. This means that careful thought should be given to the selection of a research supervisor in the very early stage of the program (see Section 4.2). It is recommended that students seriously consider this before arriving in the Department.

Because of the highly competitive nature of scientific research and regulated time limitations in graduate programs, students are expected to work on a full-time basis (less vacation; see Section 6.5).

3.3 Graduate Courses

The Department offers a range of single semester courses in Chemistry at the graduate level. Descriptions are available in the Faculty of Graduate Studies Calendar at http://www.ucalgary.ca/pubs/calendar/grad/current/chemistry.html. Current course offerings are available from the Chemistry Graduate Studies Office or http://www.ucalgary.ca/chem/graduate/current_students/courses. If deemed appropriate for the student's particular program, graduate course(s) offered by other Departments may be counted in the minimum requirement. Written permission from both Departments is required. The equivalent of three (3) half courses is required in an M.Sc. program and four (4) half courses in a Ph.D. program, following the equivalent of a four-year B.Sc. degree, or a minimum of one (1) and a maximum of four (4) half courses for students holding an M.Sc. degree. The number of half courses required in the latter category will be determined by the student's background in relation to area of interest, and in consultation between the student, their supervisor, and the Director of Graduate Studies. The selection of courses is based on interviews (Section 3.1), previous education, and the intended field of specialization. For continuing students, course requirements are planned in consultation with the Research Supervisor and the Supervisory Committee.

In general, program decisions will be made by the student's supervisor and supervisory committee in consultation with the Director of Graduate Studies.
3.4 Optional Independent Study Course

In order to give students the opportunity to broaden their graduate program, an Independent Study Course may be offered. This course would replace one of the required half-courses. The student and supervisor must discuss this option as soon as possible in the term to allow for processing and registration prior to the term deadline. The supervisor must notify the office that he/she wishes to offer the course, identify the name of the student, provide a title, give a brief description of the course content and the marking scheme. On approval of the request by the Department Head, the course will be timetabled as Chemistry 701.xx. The student will be notified when the course is available for registration.

The Independent Study course may consist of laboratory work, calculations, and/or critical evaluation of current literature in a field other than the student's major field. In certain cases, an Independent Study course under the supervision of a faculty member in other Departments may be approved however, this requires the written approval of both Departments.

Chem 701 may be taken a maximum of two times for credit.

3.5 Chemistry Research Seminars

Seminars in the Department include the Visiting Speakers program, the Chem 601 (Fall)/Chem 603 (Winter) series, and Final PhD Research presentations. The objectives of these seminars are:
(a) to provide a forum for discussion and constructive criticism of recent advances in chemical research both as reported in the current literature and made in the Department;
(b) to provide opportunities for instruction in areas and topics not covered in regular course work;
(c) to provide graduate students with an opportunity to develop techniques of oral presentation, lecturing, and defence of argument; and
(d) to expose students to current research at other Universities.

Participation in Chem 601 and Chem 603, which includes attendance and presentations, is mandatory for all graduate students in every year of program. Registration is required in the first year only, and "credit" (CR) is given once on transcripts for satisfactory performance. The Chem 601/603 series consists of both Departmental Seminars and Group Seminars. The former are formal presentations given by senior graduate students normally in their last year of program, postdoctoral fellows, or faculty members. Attendance by all members of the Department is encouraged. For the latter, the researchers of the Department are divided into five groups - Inorganic, Organic, Analytical/Environmental, Physical, and Theoretical. Each group conducts its own program which may take the form of short presentations of current literature reports or an exploration of themes or current trends.

A) Type of Seminars
Seminars will be classed as either Group or Final.

B) Number of Seminars
M.Sc. Program
Students will deliver a minimum of one 60-minute Group seminar or the equivalent, including discussion (equivalent means: two 30 minutes, three 20 minutes, etc.
seminars). A seminar is optional in the first year of registration in the Faculty of Graduate Studies.

Students will deliver a Final seminar (~50 minutes) to the Group.

**Ph.D. Program**

Students will deliver a minimum of two 60-minute Group seminars or the equivalent, including discussion (equivalent means: two 30 minutes, three 20 minutes, etc. seminars). A seminar is optional in the first year of registration in the Faculty of Graduate Studies.

Students will deliver a Final seminar (~50 minutes) to the Department.

Students have the option of giving a seminar in their first year of study. The graduate office will keep a record of the number and/or length of the seminars given by the students. The student in consultation with their supervisor will be responsible for ensuring that they complete the minimum requirement for the Group seminar component of 601/603.

**C) Content of Seminars**

**Group Seminars**
The content of the Group seminar(s) will be decided between the Group Coordinator and the student, but must not be in the area of the student’s personal research or deal with course material.

**Final Seminar**
The final seminar must be on the student's thesis research.

**D) Evaluation Process**

Appraisal forms will be completed by the seminar audience and given to the group coordinator. A summary of these comments will then be provided to the student.

**Satisfactory Performance**
The Group Coordinator and Supervisor will provide verbal feedback (within one week of the seminar) to the student on areas such as content, style, quality of slides, discussion, answering questions, etc. The student may ask for a written assessment of his/her seminar.

**Unsatisfactory Performance**
The Group Coordinator will provide written feedback (within one week of the seminar) to the student after consulting with the student's supervisor. The student will meet with the Supervisory Committee and Group Coordinator (within two weeks of the seminar) to determine the content and date for another seminar.

**3.6 Program Changes (M.Sc. to Ph.D.) (see Appendix 1)**

MSc students planning to transfer into PhD program must inform by writing between 12 to 18 months of their start date to the Graduate Program Director (GPD) and or Graduate Program Administrator (GPA). At the time of communication, students must have completed three half course equivalents (HCEs), at graduate levels /of which one of them can be 500 level courses, with an average GPA of 3.5 or better. Student will be registered into PhD program after meeting the above requirement. Student must complete the fourth half course equivalent course at the graduate level with overall minimum average GPA of 3.5 /4 HCEs or better prior to final arrangements for the transfer to PhD in preparation for the Candidacy Exam. If the GPA is less
than 3.5, the student will remain in the M.Sc. program. The Candidacy exam must be completed within 22 months of start date in the graduate studies.

If the student has decided, prior to 12-18 months in program, that they wish to transfer to the Ph.D., the annual meeting may also act as a pre-Candidacy Examination meeting, otherwise, a separate pre-candidacy meeting must be held prior to 18 months in program. The supervisor is required, in consultation with the student, to choose one additional faculty member to attend the pre-Candidacy Examination meeting. This member will become part of the Candidacy Examination committee. An additional faculty member will also be required but does not have to be identified at this time nor be in attendance at this meeting. The additional faculty members, beyond the supervisory committee, may be, but are not required to be, external to the department. It is recommended that one committee member’s expertise be at arm’s length from the candidate’s research. A neutral chair will be assigned by the graduate coordinator for the oral component of the candidacy examination.

The candidate will submit a hard copy draft (minimally 10-pages) of their 25-page research proposal to their committee at least 7 days prior to the pre-examination meeting, and the final hard copy version at least 30 days prior to the oral component of the candidacy examination. Both the draft and final proposal are to be written in 12-font and double-spaced.

The candidate will submit within one week of her/his pre-candidacy meeting a “Timelines” form (available from http://www.ucalgary.ca/chem/graduate/programs/rules_checklists) to the department graduate office.

A minimum of five weeks prior to candidacy examination, the student/supervisor will provide to the department graduate office final details of the student’s examination arrangements. The Chemistry Graduate Studies, one-month prior to the oral examination, must approve a Notice of Candidacy Examination as prepared department graduate office based on the information provided by the student/supervisor.

Normally, within 30 days of receiving notice from the student that he/she wishes to attempt the Candidacy Examination, the supervisor will organize a pre-Candidacy Committee meeting with the student to decide, in conjunction with the student, the sub-discipline the student will be examined on during the Candidacy 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 will be treated as one of the yearly meetings of the Supervisory committee with the student.

The supervisor will complete, in conjunction with the student and examination 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’.

The student will prepare the final version of their research proposal and submit hard copies to their supervisor and the Candidacy Committee (including neutral chair) at least 30 days prior to the oral defense. 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.

2. Roughly **10 pages** of the proposal should be devoted to describing the relevance of the project and a thorough background treatment of research 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. Please see below.*

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.

At least ten days prior to the oral examination, the committee, including the supervisor, will prepare feedback on the proposal and give it a formal evaluation of Pass or Fail. 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 committee is encouraged to provide critical feedback to improve the student’s scientific writing and thinking. 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 research proposal in accordance with the feedback, and postpone their oral examination until the written component is successfully completed. The student may resubmit a revised version of their proposal no sooner than two weeks after the previous decision is presented to them.

In the event of a Pass, at least seven days before the oral examination, the supervisor will meet with the student to provide feedback (i.e. paraphrased comments, not verbatim) on the proposal and the original extensions and identify any major deficiencies.

The Candidacy MSc Examination will be held exactly like a Candidacy PhD Examination. The Department Chemistry, one-month prior to the oral Candidacy Examination, must approve a Notice of Candidacy Examination.

M.Sc. students must transfer to the Ph.D. program and take the Candidacy Examination no later than 22 months after first registration in the Faculty of Graduate Studies within the Department of Chemistry.
The Candidacy Examination will consist of both the written research proposal and an oral component. The student will be advised of the committee ruling at the conclusion of the oral examination.

The oral examination will be conducted like a Candidacy Examination as described in the departmental Candidacy Examination document. For further information please also see the FGS website http://grad.ucalgary.ca/current/managing-my-program/examinations

Note: The “Handbook of Supervision and Examination” has been replaced in the 2015-16 Graduate Calendar with the Academic Regulations section http://www.ucalgary.ca/pubs/calendar/grad/current/gs-academic-regulations.html.

Questions during the early part of the oral examination should focus on details and background related to the 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.

During the discussion of the outcome of the examination, 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 examinations but is recommended in cases where members of the committee would like a record of suggestions. This form requires both student and supervisor signatures as acknowledgment that remedial action will take place.

As per the FGS guidelines, two committee members voting “Fail” will constitute a failed examination. On a first attempt at the exam, a retake may be granted. The student will be advised of the committee ruling at the conclusion of the oral examination.

During the Candidacy exam teaching duties, or appropriate alternate arrangements for, must be maintained. With the exception of the three weeks immediately preceding the oral defense, research responsibilities must be maintained.

Outcome of the Candidacy Examination:

The Director of Graduate Studies will recommend to the Faculty of Graduate Studies that former M.Sc. now PhD students who have passed the Candidacy Examination have a Recommendation of Candidacy applied to their Ph.D. program. PhD students who are unsuccessful in the Candidacy Examination may attempt the re-take no sooner than two months and no later than six months from the date of the first examination.

Guidelines for M.Sc. Students Who Have Transferred into the Ph.D. program:

Upon successful completion of the candidacy exam and transfer to the Ph.D. program, students will change back to Program (continuing) fees as the Ph.D. course requirements are met. Satisfactory completion of the Candidacy Examination will advance the student to the category "Candidate for the Ph.D."

Students in the Ph.D. program are required to do two group seminars and a final departmental seminar. Credit will be given to a student who opted to do a seminar in his/her first year of program.
Financial assistance is normally available to all qualified students in the form of Teaching Assistantships (TA), Graduate Student Scholarships (GSS) and Trust funding. TA and GSS are normally not available beyond 52 months in a Ph.D. program. Time in program prior to the transfer will be credited towards the 52 months. Students should also inquire about scholarships available from the Faculty of Graduate Studies in the University of Calgary open scholarship competition held each year in January.

3.7 Candidacy Examination (Ph.D. Program Only)

A doctoral student must take the Candidacy Examination no later than twenty-two (22) months of first registration in the Faculty of Graduate Studies.

Normally all course work is completed prior to attempting the Candidacy Examination.

The Examination is conducted by an approved Candidacy Examination Committee (Supervisory Committee, Section 4.4, augmented with additional members as required by the Graduate Faculty, Section 5.1).

The annual meeting may also act as a pre-Candidacy Examination meeting, otherwise, a separate pre-candidacy meeting must be held prior to 18 months in program. The supervisor is required, in consultation with the student, to choose one additional faculty member to attend the pre-Candidacy Examination meeting. This member will become part of the Candidacy Examination committee. An additional faculty member will also be required but does not have to be identified at this time nor be in attendance at this meeting. The additional faculty members, beyond the supervisory committee, may be, but are not required to be, external to the department. It is recommended that one committee member’s expertise be at arm’s length from the candidate’s research. A neutral chair will be assigned by the graduate coordinator for the oral component of the candidacy examination.

The candidate will submit a hard copy draft (minimally 10-pages) of their 25-page research proposal to their committee at least 7 days prior to the pre-examination meeting, and the final hard copy version at least 30 days prior to the oral component of the candidacy examination. Both the draft and final proposal are to be written in 12-font and double-spaced.

The candidate will submit within one week of her/his pre-candidacy meeting a “Timelines” form (available from [http://www.ucalgary.ca/chem/graduate/programs/rules_checklists](http://www.ucalgary.ca/chem/graduate/programs/rules_checklists)) to the department graduate office.

A minimum of five weeks prior to candidacy examination, the student/supervisor will provide to the department graduate office final details of the student’s examination arrangements. The Department of Chemistry, one-month prior to the oral examination, must approve a Notice of Candidacy Examination as prepared by the department graduate office based on the information provided by the student/supervisor.

Normally, within 12 months or first registration as a Ph.D. student, the supervisor will organize a pre-Candidacy Committee meeting with the student to decide, in conjunction with the student, the sub-discipline the student will be examined on during the candidacy 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, textbooks, literature, etc. necessary for the student to prepare for the examination. This meeting will be treated as one of the yearly meetings of the Supervisory committee with the student.
The supervisor will complete, in conjunction with the student and examination 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’.

The student will prepare the final version of their research proposal and submit hard copies to their supervisor and the Candidacy Committee (including neutral chair) at least 30 days prior to the oral defense. 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.
2. Roughly 10 pages of the proposal should be devoted to describing the relevance of the project and a thorough background treatment of research 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 five 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. Please see below.

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.

At least ten days prior to the oral examination, the committee, including the supervisor, will prepare feedback on the proposal and give it a formal evaluation of Pass or Fail. 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 committee is encouraged to provide critical feedback to improve the student’s scientific writing and thinking. 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 research proposal in accordance with the feedback and postpone their oral examination until the written component is successfully completed. The student may resubmit a revised version of their proposal no sooner than two weeks after the previous decision is presented to them.

In the event of a Pass, at least seven days before the oral examination, the supervisor will meet with the student to provide feedback (i.e. paraphrased comments, not verbatim) on the proposal and the original extensions and identify any major deficiencies.
Ph.D. students must take the Candidacy Examination no later than 22 months after first registration in the Faculty of Graduate Studies within the Department of Chemistry. The Candidacy Examination will consist of both the written research proposal and an oral component. The student will be advised of the committee ruling at the conclusion of the oral examination.

The oral examination will be conducted as described in the departmental Candidacy Examination document. For further information please also see the FGS website http://grad.ucalgary.ca/current/managing-my-program/examinations

Note: The “Handbook of Supervision and Examination” has been replaced in the 2015-16 Graduate Calendar with the Academic Regulations section http://www.ucalgary.ca/pubs/calendar/grad/current/gs-academic-regulations.html.

Questions during the early part of the oral examination should focus on details and background related to the 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.

During the discussion of the outcome of the examination, 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 examinations but is recommended in cases where members of the committee would like a record of suggestions. This form requires both student and supervisor signatures as acknowledgment that remedial action will take place.

As per the FGS guidelines, two committee members voting “Fail” will constitute a failed examination. On a first attempt at the exam, a retake is granted. The student will be advised of the committee ruling at the conclusion of the oral examination.

During the Candidacy exam teaching duties, or appropriate alternate arrangements for them, must be maintained. With the exception of the three weeks immediately preceeding the oral defense, research responsibilities must be fully maintained.

Guidelines for Ph.D. Students Who Have Passed the Candidacy Examination

Satisfactory completion of the Candidacy Examination will advance the student to the category "Candidate for the Ph.D."

Failure of the Candidacy Examination may lead to a recommendation that the student withdraw from Graduate Studies or be given the opportunity of a re-examination. The re-take must take place no sooner than two months and no later than six months from the date of the first examination (see the Faculty of Graduate Studies regulations at http://grad.ucalgary.ca/current/managing-my-program/examinations or consult the Graduate calendar http://www.ucalgary.ca/pubs/calendar/grad/current/gs-j.html).

3.8 Thesis

Students are advised to consult the departmental collection of theses before writing their own. You should also consult the Faculty of Graduate Studies web site
Please refer to Appendix 5 “Planning to Defend and Convocate” for a check-list of requirements and procedures for arranging your thesis defense.

The thesis normally embodies a more extensive literature review and more detailed descriptions of experimental procedures, etc., than would be permissible in a journal publication based on the thesis. This is not to indicate that a thesis must necessarily be very long, but rather that the objectives of the thesis and the normal scientific paper in a refereed journal are somewhat different. In the thesis the graduate student is expected to demonstrate the capability of organizing and interpreting the current status of knowledge in the chosen research field, and of planning and executing a research project which will lead to advances in knowledge in that field. Further, it is expected that the findings are placed in a proper perspective. In a journal article the emphasis is placed on new contributions, and space limitations dictate that literature review aspects be minimized. A specialist readership is usually assumed for journals, whereas a thesis may be read by persons not necessarily expert in the research topic.

3.9 Thesis Oral

The thesis oral constitutes the final examination in any graduate program. For this purpose, the candidate must defend the thesis work before an Examination Committee approved by the Faculty of Graduate Studies. For the Ph.D. degree only, the principal or external examiner usually comes from another university and generally is an expert in the area of the thesis research. Please consult http://grad.ucalgary.ca/current/thesis and the examination guidelines there.

4. SUPERVISION OF GRADUATE STUDENTS

4.1 Interim Advisor

The Director of Graduate Studies will act as the Interim Advisor to new graduate students during the first four months in program. The faculty member who provides office and lab space to the student is referred to as the host supervisor. It is that same faculty member that requested the offer of admission and agrees to provide space and funding to the student for the duration of their program.

Arrangements for an Interim Advisor must be made by a faculty member who goes on Sabbatical or other extended leave.

4.2 Selection of Supervisor

Although Faculty regulations do not require the choice of a supervisor to be made until the conclusion of the first registration period, this department requires that at the start of the student’s second term (at five months in program) the host supervisor will become the supervisor. At the same time, the student is required to submit the names of their supervisory committee members (see Section 4.4).
On the average, an M.Sc. program should take between two (2) to three (3) years, and a Ph.D. program between four (4) to (5) years to complete (see Section 7). It is therefore advisable that the student becomes involved in a research problem as early as possible.

Every graduate student should have the opportunity to work with the faculty member of choice, subject to agreement by that faculty member. However, factors such as the availability of laboratory space and research funds, and the existing level of commitments of the faculty member may be overriding.

When accepting supervisory responsibility for a student, a faculty member also accepts the responsibility for providing summer stipends for the student (May to August, inclusive), provided that:

(a) research grant funds are available;
(b) the student remains in good academic standing, i.e. is making satisfactory progress in course work and research; and
(c) the student does not obtain direct scholarship support covering the summer period(s).

4.3 Change of Supervisor

If a change of supervisor appears to be desirable or necessary, the Director of Graduate Studies must be consulted, and the appropriate form must be completed.

4.4 Supervisory Committee

The Supervisory Committee consists of three faculty members, that is, two others in addition to the supervisor for both the M.Sc. and Ph.D. programs. The Committee is normally chaired by the Research Supervisor. Its function is to provide assistance and guidance for the student while pursuing the course of study and research. It is advisable to select faculty members whose research, while not necessarily lying in the general area of interest, is nevertheless related to the project, as members of the committee. In some instances, it may be preferable if one member of the Committee is chosen from a Department other than Chemistry.

The Committee is set up on the basis of "departmental" recommendation to the Dean of the Faculty of Graduate Studies. The normal procedure is for the student's supervisor, upon consulting with the student, to propose a composition of the Committee to the Director of Graduate Studies. If the selected faculty members are willing to serve, the Director of Graduate Studies will normally endorse the recommendations and communicate them to the Dean of the Faculty of Graduate Studies for approval.

When a student indicates that he/she will attempt the Qualifying Examination the yearly supervisory committee meeting now becomes both a yearly meeting and a pre-Qualifying Examination meeting. The supervisor is required, in consultation with the student, to choose one additional faculty member to attend the pre-Qualifying Examination meeting. This member becomes part of the Qualifying Examination committee.

All Supervisory Committees are required to meet with the student at least once per year.
5. **EXAMINATION COMMITTEES**

5.1 **Candidacy Examination (M.Sc. program only)**

The Qualifying Examination Committee consists of the Supervisory Committee plus two additional faculty members. See section 3.6. It is chaired by a neutral chair, assigned by the graduate coordinator.

5.2 **Candidacy Examination (Ph.D. program only)**

The Candidacy Examination Committee consists of the Supervisory Committee plus two additional faculty members. See Section 3.7. It is chaired by a neutral chair, assigned by the graduate coordinator.

5.3 **Final Thesis Oral Examination**

The Thesis Examination Committee for the M.Sc. degree consists of the Supervisory Committee and one additional member who may be from another Department in the University. For the Ph.D. degree, the Committee consists of the Supervisory Committee and two other examiners, one of whom may be from another Department of the University, and one of whom must be external to the University and a recognized authority in the special field of research. The external examiner must be approved by the Faculty of Graduate Studies six weeks prior to the final oral examination. The Examination Committee must be approved by the Dean at least four (4) weeks in advance of the examination on the recommendation of the Director of Graduate Studies, who in turns acts on the advice of the Supervisory Committee. For doctoral theses the Department, subject to funding and the availability of an external examiner at the required time, generally prefers to have an external examiner attending the oral examination, instead of an external reading, merely adjudicating the thesis. All examiners are required to submit a written assessment of the thesis before the commencement of the oral examination.

6. **FINANCIAL SUPPORT**

6.1 **General Policy**

Past and current practice of the Department has been to provide continuing financial support for all graduate students who are progressing satisfactorily in their programs, although no specific financial commitment is made beyond the first-year award. The financial support periods are divided into two 4-month terms during the academic session, September 1 to April 30, and the 4-month summer period May 1 to August 31. Students are encouraged to seek direct scholarship support whenever possible, which will free them from assistantship duties and allow more rapid progress towards the degree.

6.2 **Graduate Assistantships (Teaching)**

Financial support for the period September to April is typically available through appointment as a Graduate Assistantship Teaching (GA(T)). This support is in full or ½ units with half units supplemented from a research grant held by the student's supervisor. Part-time assistantship appointments may be combined with a major scholarship award or with additional support from a research grant held by the student's supervisor.
GA(T) and Graduate Student Scholarship (GSS) (see below) awards are normally not available beyond twenty-eight (28) months in a M.Sc., and fifty-two (52) months in a Ph.D. program.

The teaching performance of all GA(T)s is evaluated annually on the basis of faculty and undergraduate student comments on laboratories and tutorials. "Unsatisfactory" GA(T)s are not reappointed (and may even be relieved of teaching duties during the academic session, or have their duties reassigned). Reappointment and progression through stipend levels depends upon satisfactory teaching performance and is subject to availability of departmental funds. Reapplication for assistantship support is not required of continuing students, although specific wishes should be made known to the Director of Graduate Studies.

The assignment of GA(T)s to teaching duties is the responsibility of the Department Head. This is not usually possible until early September. Course instructors are asked to enumerate specific duties and time involvement expected of GA(T)s assigned to their course(s). An attempt is made to assign a student to the labs/tutorials which have been requested, and also to assign a student to only one course. It must be understood, however, that it may not be possible to satisfy the requests of all students. GA(T)s will be asked to assist in marking examinations only if they have no examination of their own coming up in the next five days.

Instruction in first aid and local emergency procedures and general laboratory safety is required of all GA(T)s as a condition of their appointment. In some courses GA(T)s may be required to participate in a brief training session before undergraduate laboratories commence.

6.3 Graduate Student Scholarships

Graduate Student Scholarships (GSS) are awarded by the Department without specific application on the part of the student. The normal criterion is that of "academic merit", based usually on superior performance in graduate courses, although other factors may also be taken into consideration in order to ensure that all continuing students are supported.

6.4 Research Grant Support

The regulations of the granting agency determine the level of support that may be offered to a graduate student from research grants awarded to a faculty member and held in trust by the University. Students supported on such grant funds must naturally engage in research related to the respective grant proposal. In some cases, the project orientation may be quite specific. The grantees have sole authority for the disbursement of such funds, subject only to the regulations of the granting agency. Appointments of this nature are termed Graduate Assistantships (Trust). They are similar to the GA(T) and GSS in their terms of reference and carry certain income tax advantages (see Section 6.5).

Support for graduate students for the May to August period who do not hold scholarships or GSS awards, is normally derived from research grants.

6.5 Terms of Appointment for Graduate Assistantships

A GA(T) is considered partly as a scholarship, the remainder, as remuneration for services rendered. The GSS and GA(Trust) are viewed entirely as scholarships. The terms of appointment for the GAs are laid down in the Assistantship Schedule, outlining such benefits as Sick Leave, Parental Leave, Unemployment Insurance, Worker's Compensation, etc.
All full-time graduate students are covered automatically by Accident Insurance. Further details are available from the Graduate Studies Office.

Vacations during the tenure of GA(T) awards are subject to regulations laid out in the current Assistantship Schedule of the Faculty of Graduate Studies. The Department, therefore, expects GA(T)s to be present for the full extent of the appointments (1 September - 30 April) and will allow absences from campus during such periods only in exceptional circumstances, such as family emergencies or attendance at conferences. Students must seek prior approval of the Graduate Studies Coordinator if an absence of this kind is necessary. While supported from scholarship or from research trust funds, the regulations of the funding agency prevail. For example, NSERC postgraduate scholarships permit annual holidays not exceeding three weeks during a full twelve-month period.

As per FGS guidelines non-scholarship graduate students in the department are normally entitled to two weeks of vacation time per year, subject to mutually satisfactory arrangements with their supervisor.

Graduate students are responsible for their own Alberta Health Care Coverage (compulsory). There is also a comprehensive dental and extended health care plan, administered through the Graduate Students' Association.

6.6 Natural Sciences and Engineering Research Council (NSERC) Scholarships

The NSERC Postgraduate Scholarships (PGS) Program provides financial support to high-calibre students who are engaged in master's or doctoral programs in the natural sciences or engineering. This support allows these students to fully concentrate on their studies and to seek out the best research mentors in their chosen fields. To be eligible for support for the majority of NSERC's Scholarships and Fellowships programs you must be a Canadian citizen or a permanent resident of Canada, as of the deadline date for application.

6.7 Alberta Innovates Technology Futures Scholarships

Canadian Students
All Canadian students holding a current Natural Science and Engineering Research Council of Canada (NSERC), Canadian Graduate Scholarship (CGS) or Postgraduate Scholarship (PGS) award whose research falls within the area of nanotechnology, information and communications technology, or genomics are eligible to hold an Alberta Innovates Graduate Student Scholarship Top Up award. A short submission is required in order to commence this award.

International Students
The Alberta Innovates Graduate Student Scholarship award is open to international students entering or currently in a full-time graduate program at an Alberta university conducting research in the area of nanotechnology, information and communications technology or genomics working toward a research-based masters or doctoral degree. This funding will be determined on a competitive basis.
For more details please refer to the Guidelines, currently available at:
http://www.albertatechfutures.ca/ and
http://grad.ucalgary.ca/awards/opportunities/alberta_innovates#AITF.

6.8 Other External Award Opportunities
The Faculty of Graduate Studies compiles information as received in their office. See
http://grad.ucalgary.ca/awards/opportunities/university-awards/achievement-awards
for details.

6.9 Other Internal Award Opportunities

Graduate Achievement Awards
The Faculty of Graduate Studies Graduate Achievement Award was created to recognize
outstanding achievement, leadership and support of graduate education at the University of
Calgary. The Graduate Achievement Awards Competition is our opportunity to recognize
individuals for their inspiration, innovation and outstanding contributions to teaching and
research.

All students registered in the Faculty of Graduate Studies are eligible for nomination. Specific
selection criteria are determined by the individual award and interested applicants are
encouraged to review the award information for each of the four awards:

- J.B. Hyne Research Innovation Award
- NSERC Research Achievement Award
- Michael Lazar Community Service Award
- The Killam Graduate Supervision and Mentoring Award

Graduate Award Competition
In this annual competition, the Faculty of Graduate Studies (FGS) offers the following
scholarships ranging in value from $750 to $60,000:

- Izaak Walton Killam Pre-Doctoral Scholarship
- Open Doctoral Scholarships
- Special Awards
- Bursaries

Only one application is required regardless of how many awards you apply for. You must,
however, meet the terms of reference eligibility criteria of each award you apply for. Specific
award information can be found on the Graduate Scholarship Database.

Special Awards and Bursaries
Special awards are open to students from more than one program and support a particular area
of interest or field of study. Bursaries are open to students who meet the eligibility criteria and
are assessed as having financial need equal to or greater than the value of the bursary.

Program Recommended Awards
Program Recommended Awards support students registered in a specific program or Faculty.
These awards may also support a specific area of research within that program or Faculty.

Medals and Prizes Competitions
Medals and Prizes recognize graduates whose dissertations make an original and significant
contribution to their academic field.
7. **LENGTH OF PROGRAM**

The length of time required to complete the M.Sc. or Ph.D. program depends on many factors, including:

(a) the type of degree held by the student on entering, e.g. 4-year B.Sc., M.Sc. etc.
(b) the extent to which Chemistry was emphasized in the undergraduate "major";
(c) the amount of time devoted to teaching (GATs);
(d) the length of time required by the student to select a supervisor and/or research project;
(e) the research area and the specific nature of the thesis project which can vary greatly;
(f) the degree of dedication of the student to scholarship and research.

8. **DEPARTMENTAL COMMITTEES**

8.1 **Graduate Student Members**

Our Chemistry Graduate Student Association is active in many aspects of student life - including the fun stuff! – and you will find a friendly and supportive environment within this department [http://www.ucalgary.ca/chem/graduate/current_students/graduate_association](http://www.ucalgary.ca/chem/graduate/current_students/graduate_association).

The Department operates with a number of Standing Committees and the following have graduate student representation:

(a) Curriculum Committee  
(b) Departmental Affairs Committee  
(c) Teaching Development  
(d) Graduate Studies Advisory Committee  
(e) Safety Committee  
(f) Visiting Speakers Committee  
(g) Library Committee

Committee membership is reviewed annually by the Department Head in May or June, and new terms of office normally commence July 1st. Graduate students are not usually appointed until September. Student members for these Committees are recruited by calling for volunteers in the first instance. In the event that no volunteers are forthcoming, the Graduate Studies Coordinator endeavours to find volunteers from among the general body of Chemistry graduate students. In the case of more than one volunteer for a position an election is held, the winner being determined by plurality. The Departmental Staff Meetings and the Faculty of Science Council Meetings also have Graduate Student Representatives in attendance.
Appendix 1

**Procedures for transfer from MSc to PhD (Valid until October 2020 for January 2019 Start)**

Students planning on trying the Candidacy Examination must have completed, one month prior to the yearly meeting with their supervisory committee, a minimum of two graduate level half course equivalents with an average GPA of 3.5 or better. A third graduate level half course equivalent must be completed and an average GPA of 3.5 or better over the three graduate level half courses maintained, prior to final arrangements for the transfer to PhD in preparation for the Candidacy Exam. If the GPA is less than 3.5, the student will remain in the M.Sc. program.

No later than 16 months in program, student will inform his/her supervisor and the Director of Graduate Studies in writing that he/she intends to attempt the Candidacy examination.

If prior to 12 months in program student decides to attempt candidacy exam, and therefore transfer to the PhD program, the annual meeting may also act as a pre-Candidacy Examination. Otherwise, a separate pre-candidacy meeting must be held prior to 18 months in program.

The supervisor is required, in consultation with the student, to choose one additional faculty member to attend the pre-candidacy Examination meeting. A second additional faculty member will also be required for the oral examination but does not have to be identified at this time nor be in attendance at this meeting. The additional faculty members may be, but are not required to be, external to the department.

The student submits a draft (10-pages) of their 25-page research proposal to their committee and the graduate office at least 7 days prior to the pre-examination meeting.

The final version of the 25-page research proposal is due to all committee members and the graduate office at least 30 days prior to the oral component of the qualifying examination.

Within 30 days of notice from the student that he/she wishes to attempt the Candidacy Examination, the supervisor will organize a pre-Candidacy Committee meeting to determine the sub-discipline the student will be examined on during the Qualifying.

The supervisor will complete, in conjunction with the student and examination committee at the pre-examination meeting, the “Pre-Candidacy Examination Form”, with topics for examination and levels of understanding expected.

The student/supervisor will provide the graduate office with oral examination details and a notice of candidacy examination will be prepared, signed, and approved by the Department of Chemistry office no later than one month before oral examination. A neutral chair will be assigned by the graduate office.

At least 30 days prior to the oral exam, the student will submit copies of the final version of their research proposal to their supervisor, the Candidacy Committee including the neutral chair and the department graduate office.
Appendix 1a

Procedures for transfer from MSc to PhD (Effective for May 2019 Start)

MSc students planning to transfer into PhD program must inform by writing between 12 to 18 months of their start date to the Graduate Program Director (GPD) and or Graduate Program Administrator (GPA). At the time of communication, students must have completed three half course equivalents (HCEs), at graduate levels of which one of them can be 500 level courses, with an average GPA of 3.5 or better. Student will be registered into PhD program after meeting the above requirement. Student must complete the fourth half course equivalent course at the graduate level with overall minimum average GPA of 3.5 /4 HCEs or better prior to final arrangements for the transfer to PhD in preparation for the Candidacy Exam. If the GPA is less than 3.5, the student will remain in the M.Sc. program. The Candidacy exam must be completed within 22 months of start date in the graduate studies.

If prior to 12-18 months in program student decides to attempt candidacy exam, and therefore transfer to the PhD program, the annual meeting may also act as a pre-Candidacy Examination. Otherwise, a separate pre-candidacy meeting must be held prior to 18 months in program.

The supervisor is required, in consultation with the student, to choose one additional faculty member to attend the pre-candidacy Examination meeting. A second additional faculty member will also be required for the oral examination but does not have to be identified at this time nor be in attendance at this meeting. The additional faculty members may be, but are not required to be, external to the department.

The student submits a draft (10-pages) of their 25-page research proposal to their committee and the graduate office at least 7 days prior to the pre-examination meeting.

The final version of the 25-page research proposal is due to all committee members and the graduate office at least 30 days prior to the oral component of the qualifying examination.

Within 30 days of notice from the student that he/she wishes to attempt the Candidacy Examination, the supervisor will organize a pre- Candidacy Committee meeting to determine the sub-discipline the student will be examined on during the Qualifying.

The supervisor will complete, in conjunction with the student and examination committee at the pre-examination meeting, the “Pre-Candidacy Examination Form”, with topics for examination and levels of understanding expected.

The student/supervisor will provide the graduate office with oral examination details and a notice of candidacy examination will be prepared, signed, and approved by the Department of Chantry office no later than one month before oral examination. A neutral chair will be assigned by the graduate office.

At least 30 days prior to the oral exam, the student will submit copies of the final version of their research proposal to their supervisor, the Candidacy Committee including the neutral chair and the department graduate office.
Department of Chemistry

Timelines for Candidacy Examination of

Student Name: ___________________________________ UCID: __________________________

Supervisor: _________________________________________ Annual Registration Date: ___________

Transfer from MSc to PhD ____          Candidacy Exam ____

One month before annual meeting completion of two graduate level half courses with minimum average gpa of 3.5. Third graduate level half course must be completed before transfer and the fourth course plus final arrangements for oral exam.

(For transfer MSc to PhD candidacy examination only, before sixteen (16) months in program, inform supervisor and department graduate office of intent to attempt candidacy exam.)

Candidacy exams must take place prior to twenty-two (22) months in program.

Transfer Date ________________ (if MSc to PhD)

Draft (10 pgs.) of research proposal ________________________________________ (7 days before pre-exam meeting)

Pre-Examination meeting took place on ________________________________

Notice of Candidacy Examination for Department Approval ______________________  (37 d.B.O.)

Final 25-page research proposal ___________________________________________  (30 d.B.O.)

Evaluation of research proposal by committee to supervisor _____________________  (10 d.B.O.)

(Co mmittee Members must VOTE a PASS or FAIL on the student’s Written Proposal along with their feedback to the Supervisor.)

Circulation of feedback from supervisor to all committee and _________________  (7 d.B.O.) department graduate office

Student to receive feedback from supervisor ________________________________  (7 d.B.O.)
(paraphrased comments, not verbatim) on the proposal

d. B.O. = Days Before Oral Examination

The oral examination will take place on ______________________
at __________________ in ____________________
Department of Chemistry

Candidacy Pre-Examination Form

Student: ______________________________________

Supervisor: ____________________________________

Transfer from MSc to PhD ____ Candidacy Exam _____

Core topics for oral examination based upon research sub-discipline and proposal. (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'.)

Student Signature                      Date

Supervisor Signature                    Date
Department of Chemistry

Candidacy Examination Feedback Form

Student: ____________________________ Supervisor: ____________________________

Transfer from MSc to PhD ____ Candidacy Exam ________ Examination date __________________

Noted subject(s)/skill(s) where deeper understanding/improved proficiency by student is recommended (This may include scientific topics or items such as writing/language skills):

Remedial recommendation and timeline (Suggestions such as course audits or other training courses may be offered here):

Graduate Coordinator Comments (post-remedy):

Grad Coordinator Signature  Date
Signatures below acknowledge action will be taken on the above recommendations.

Student Signature  Date

Supervisor Signature  Date

MSc & PhD Defense To-do List

✓ Submit your Application for Degree through your student centre via myUofC portal. Deadlines are: Spring Convocation (June) – by March 1; and Fall Convocation (November) - August 15.

✓ PhD students only: are required recommend an external examiner, under the advice of your supervisor. This requires the Approval of External Examiner form and a copy of the recommended examiner’s up-to-date CV. The examiner’s CV must include information on the number of graduate students supervised/PhD thesis examined. You must also provide a thesis title. This form must be submitted to FGS a minimum of six weeks prior to defense. It is not necessary to have your defense date finalized at this time, but a tentative date must be provided.

✓ Consult with your supervisor re additional committee members. MSc students must add one additional non-chemistry UofC faculty member. PhD students must add one additional non-chemistry UofC faculty member plus the external examiner as above.

✓ Inform the graduate office, SA229G, of your defense plans so that a neutral chair can be assigned.

✓ One month prior to defense date, the Notice of Oral goes to FGS for approval. In addition to the information above (committee members, date, time) the Notice also requires your final thesis title and area of specialization. The room will be booked and the Notice of Oral prepared. Note the notice requires the signatures of you, your supervisor, and the graduate coordinator.

✓ Three weeks prior to defense, all committee members including your neutral chair must receive a hard copy of your final thesis.

✓ Once your final corrections are complete and your supervisor has signed the approval page you must provide the department graduate office with:
  
  o A copy of your thesis as a pdf on CD
  
  o All keys issued to you to the main Chemistry office.

The graduate coordinator will then sign the Notice of Completion Form
https://www.ucalgary.ca/chem/graduate/programs/rules_checklists
✓ Submit your thesis to the Faculty of Graduate studies vault. For thesis guidelines, information and instructions on final thesis submission please consult [http://grad.ucalgary.ca/current/thesis/ethesis](http://grad.ucalgary.ca/current/thesis/ethesis)

✓ You need a minimum of two (red) bound copies of your thesis; one for your supervisor, one for the Main Chemistry Office please. The number of copies you prepare in addition to these two is up to you (for your folks, your significant other, your children …). We suggest using Octavia Book Binding 1040 8th Avenue SW Calgary AB. Tel 587.700.6575 [http://www.octaviapress.ca/](http://www.octaviapress.ca/) Or please shop around.

✓ If you defend and submit your final thesis to FGS prior to April 30, you will be eligible to convocate in June. If you submit on May 1, you will not convocate until November. If you defend and submit your final thesis to FGS prior to the fee payment deadline in September, you will be eligible to convocate in November.

✓ If you submit your final thesis to FGS midterm, you are not eligible for tuition refund. If you submit your final thesis to FGS the first week of a new term, you will not be assessed fees for that term. If you submit your final thesis to FGS the beginning of a new term but after the fee payment deadline for that term, you will be assessed tuition for the whole term.

✓ Cheers!