



1. Introduction

In the Department of Biological Sciences the PhD degree is only awarded following successful completion of both a public lecture and a final oral examination. Both the lecture and the examination are adjudicated by an examining committee and focus on the contents of the thesis, and any conditions or recommendations from the Ph.D. examination committee. All examining committee members must attend the student's public seminar, as it is an integral part of the final examination. Please note that the student's public seminar (that is normally held prior to the defense) is advertised at www.biology.ualberta.ca at least one week in advance of the seminar.

2. Objectives of the Final Oral Examination

The precise content of the examination is up to the examining committee. Normally, the final oral examination is strictly a defense of the thesis and a test of knowledge in discipline(s) relevant to the thesis. Students are strongly advised to discuss the content and format of the examination with their supervisory committee well before the anticipated date.

3. Thesis contents and format

Acceptable formats for theses are outlined on the FGSR website:

<http://www.gradstudies.ualberta.ca/degreesuperv/thesis/prepare.htm>. The student is responsible for ensuring that their thesis is in a format acceptable to FGSR. Questions regarding thesis format should be directed to FGSR.

4. PhD Thesis/Final Oral Examination - Summary of deadlines

- *9 weeks prior (earlier if possible) - Nomination of external examiner:* The supervisor must recommend an external examiner to CW 312, with required materials stated in "External Examiner/Reader" (see below).
- *Preliminary reading of PhD thesis by supervisory committee:* FGSR requires that before the thesis is forwarded to the external examiner, PhD supervisory committee members shall each declare **in writing** to the supervisor either that the thesis is of adequate substance to warrant that the student proceed to the final examination, or that it is not. This declaration is made on a form titled "Preliminary Acceptance of Thesis," and is available on the Biological Sciences, Graduate Program website. This declaration is signed, dated and retained in the student's file.
- *5 weeks prior: The supervisor* (not the student) recommends an **examining committee and the date/time room number** of the exam to the Associate Chair, by completing the appropriate examination notice and department arm's length nomination form. When scheduling the date of the examination, the supervisor then certifies to the Associate Chair that this declaration has been signed. Thus, a draft of the thesis must be completed and read by the supervisory committee in sufficient time (at least 5 weeks prior to the examination) to forward it to the External Examiner. Normally, students should ensure adequate time to allow their supervisor to review a complete draft of the thesis for revision before it is submitted to the rest of the supervisory committee.
- Distribution of PhD thesis:
 - 4 weeks prior: To external examiner: FGSR requires that the external examiner shall receive the thesis from the department (supervisor must send).
 - 3 weeks prior: To Chair and other members of Examination Committee: FGSR requires that the completed thesis be distributed to all members of the examining committee **including the chair**.
- Fees, registration and thesis submission dates: please visit the FGSR website (<http://www.gradstudies.ualberta.ca/en/degreesuperv/thesis/submissiondeadlines.aspx>) or University Calendar for updated deadlines.

5. Composition of Final Oral Examination

At least **five** examiners must be in attendance. The thesis must be read and evaluated by an examiner external to the university (see below). The key issue is whether or not this external examiner will be in attendance (see below).

The examining committee is made up of:

- the supervisory committee
- plus two additional academic staff members (if the 'external examiner' attends, only one staff is added), and
- a Chair who is not an examiner

Where this external examiner is absent, one of the additional examiners must come "new" to the committee and candidate (*i.e.*, at arm's length from the candidate and the research). Use of telephone or video-conferencing by the external examiner is counted as being in attendance. A maximum of one examiner only may attend via telephone or video-conferencing.

Rarely, it might be appropriate to appoint examiners who do not hold full-time faculty appointments (*e.g.*, Professors emeriti, PDF's, etc.) or who are not employees of the University (*e.g.*, scientists from government agencies or industry). In these cases, permission is requested of the FGSR by submitting to the Associate Chair, a résumé of the proposed examiner and a covering letter from the supervisor briefly explaining the appropriateness of the appointment.

Outside participants - Can others attend the final closed thesis defense?

Although FGSR regulations state that faculty members of the student's major department may attend, but should so notify the Chair of the examination beforehand, here is what DBS should do. Attendance and participation by *ex officio* members of the supervisory committee during the questioning part of the defense will be permitted. They participate in the examination, but are not permitted to participate in the discussion of the student's performance. Attendance by faculty members of the student's major department who are not on the Final Examination Committee depends on approval by the Associate Chair (Graduate Studies) and the Chair of the examination. Such visitors do not participate in questioning and must withdraw before discussion of the student's performance commences. The Dean of FGSR may attend and participate fully in the examination.

External Examiner/Reader

a) Nomination of PhD external examiner:

A PhD thesis must be read by an external examiner (an expert in the field from outside the U of A). **The supervisor, not the student, is responsible for selecting and nominating an external examiner.** In order for the external examiner to review the thesis objectively, the Faculty of Science requires that the external examiner **not** have a current or previous association with the student, the supervisor, or the department that would hinder this type of objective analysis. Students are not to contact the external examiner prior to the exam in any way, including mailing of the thesis to the examiner.

Nomination of an external examiner requires:

- a) a recent CV of the external examiner,
- b) a cover letter from the supervisor to the Associate Chair (Grad. Studies) justifying the choice and qualification of the external examiner, and
- c) an official FGSR "Request to Invite External Examiner" form.

The supervisor will supply (a) and (b) to the Associate Chair, who will ensure that these documents are forwarded along with (c) to the Faculty of Science. The Department must recommend an external examiner to the Faculty of Science at least 2 months prior to the examination.

b) Travel support for the PhD external examiner :

Department funds to help defray travel costs are very limited, but up to \$500 support will be provided on a case by case basis. The external examiner must give a seminar to one of the recognized seminar programs in the DBS.

6. Appointment and responsibilities of chair and examiners at Final Oral Examination

a) Chair

Final oral examinations for both the MSc and PhD are chaired by a member of the Department appointed by the Associate Chair. Chairs are chosen more or less in alphabetical order from within the student's research interest group, although input from students and/or supervisors is welcomed. The Chair of the examination should not have had previous formal advisory contact with the student.

Chairs have three primary responsibilities:

- i) to maintain the interests and high standards of the Department,
- ii) to ensure a fair examination for the student and,
- iii) to ensure that all required courses to date have been completed, and any other outstanding requirements listed in the student's file have been met.

The Chair thus serves as a 'referee' who ensures fairness, balance and order during the examination. The Chair will moderate the examination and direct the questioning, as well as ensuring that departmental and FGSR regulations are followed. The Chair does not vote or sign any forms. Please refer to 'A Brief Supplementary Explanation' at the end of this document for more details on the role of exam Chair.

b) Examiner(s)

Supervisors are required to recommend examiners and confirm that they can attend the examination at the date and time selected by the supervisor.

7. Recommended procedure for Final Oral Examination

Although the actual procedure followed during the examination will be determined by the examining committee, the following is a suggested guide:

1. The Chair explains the purpose of the examination to the student
2. The Chair, in the student's presence, reviews the student's record with the committee.
3. The Chair calls for questions on the above material (offers to circulate file to examiners).
4. The Chair recommends an order of questioning and coffee (or other breaks) prior to the start of the examination. The student is given the opportunity to ask questions or make requests before the examination begins. At the discretion of the Chair, the external examiner on the committee is given the opportunity to begin the questioning.
5. Commence questions from the examiners.
6. When an external examiner cannot be present at the PhD Final Examination, the Chair (or the supervisor at the Chair's discretion) will ask the student any questions raised by the external examiner in his/her written evaluation of the thesis.
7. At the conclusion of the examination the student is given the opportunity to make a closing statement or ask closing questions.
8. After the student has left the room, the examiners deliberate.
9. A final decision is normally arrived at *via* discussion until a consensus is reached. A distinction should be made between quality of the dissertation and strength of the defense. If all but one member of the committee vote favourably, majority rules unless the dissenting vote is that of the external examiner (in which case the occurrence is reported to Dean, FGSR, who will determine appropriate action). If two or more examiners cast dissenting votes, the thesis is rejected and a full report is submitted to the Associate Chair (Graduate Studies) for final adjudication. The final decision of the examining committee should be recorded on the FGSR form entitled 'Thesis Approval/Program Completion.' If revisions are required, the supervisor may withhold their signature from the form however, **the form must be placed in the student file and returned to the Assoc. Chair Grad Studies office at the conclusion of the defense.** Once the revisions are completed, the supervisor will sign the form on the student's file. The chair of the committee should complete the department's form: "Report of Final Oral Examination" which provides the Assoc. Chair Grad Studies with details of the committee's recommendation. *If external examiner does not attend in person, the external examiner's name and institution will be printed on the form and chair of examination will initial the external examiner's signatory line.*
10. Advise the student of the final decision.

Conclusions of the examining committee

i) Pass. No revisions are required.

ii) Pass subject to revisions. The student has satisfactorily defended the thesis but the revisions to the thesis are sufficiently minor that it will not require a reconvening of the examining committee. It is expected that the student will make the changes in time to submit the thesis to the FGSR on or before the deadline for the next convocation or no later than 6 months from the date of the exam. Any changes should be checked and approved by the committee chair or supervisor, who does not sign the FGSR 'Thesis Approval/Program Completion' form until the required changes are satisfactorily completed. Other committee members may also wish to withhold their signature until they can verify that their required revisions have been made to their satisfaction.

iii) Adjourned. Usually this is recommended if there are severe shortcomings in the defense of thesis, although the thesis itself may fall in one of the above categories. The final oral examination should be adjourned in the following situations:

- The revisions to the thesis are sufficiently substantial (if further research or experimentation or major reworking of sections are required, or if the committee is not satisfied with the general presentation of the thesis) that it will require a reconvening of the examining committee. The committee should not propose that the candidate has passed, rather the committee shall adjourn the examination.
- The committee is dissatisfied with the candidate's oral presentation and defence of the thesis, even if the thesis itself is acceptable with or without minor revisions.
- Compelling, extraordinary circumstances such as a sudden medical emergency during the examination.

If the examination is adjourned, the committee should:

- ✓ Specify in writing to the student, with as much precision as possible, the nature of the deficiencies and, in the case of revisions to the thesis, the extent of the revisions required. Where the oral defence is unsatisfactory, it may be necessary to arrange some discussion periods with the candidate prior to reconvening the examination.
- ✓ Decide upon a date to reconvene. If the date of the reconvened oral examination depends upon the completion of a research task or a series of discussions, it should be made clear which committee members will decide on the appropriate date to reconvene. The final date set for reconvening shall be **no later than six months** from the date of the examination. A final decision of the examining committee must be made within six months of the initial examination.
- ✓ Make it clear to the student what will be required by way of approval before the examination is reconvened (eg, approval of the committee chair or supervisor, approval of the entire committee, or of select members of the committee).
- ✓ Specify the supervision and assistance the student may expect from the committee members in meeting the necessary revisions.
- ✓ Advise the Assoc. Chair (Grad. Studies) in writing of the adjournment and the conditions.
- ✓ When the date is set for the adjourned final oral examination, the department will notify the FGSR. Normally the Dean, Vice-Dean, Associate Dean or Pro Dean attends the examination.

iv) Fail. The quality and substance of the thesis are insufficient to justify the awarding of a degree. If the final examination committee agrees that the student has failed, the committee chair shall provide the reasons in writing to the Associate Chair of Graduate Studies along with the recommendation for the student's program. The Associate Chair of Graduate Studies will then advise FGSR in writing of the outcome and recommendation of program.

The Dean, FGSR will arrange to meet with the candidate and with department representatives before acting upon any department recommendation. A decision of the FGSR which affects a student's academic standing (ie, required to withdraw) is appealable.

8. Submitting the thesis

Students can now submit their thesis to FGSR in one of two ways:

- Electronically (ERA): Students should refer to the FGSR website for complete instructions.
- Hard bound copy: Two bound copies of the thesis are required at FGSR.

In both cases, one hard-bound copy is still required to be submitted to the department (bond paper is not required).

Students should contact FGSR to ensure proper formatting and to determine any deadlines relating to the thesis submission and convocation dates.

9. Public lecture

To recognize the significant accomplishments of a student who has completed the PhD thesis, the student will give a seminar that is open to the public. The seminar will be the same day, or day before, the PhD Final Examination.

The recommended format for the seminar is:

- The candidate will give a lecture that summarizes the dissertation. This lecture should be limited to 40-45 minutes and should emphasize the major findings of the dissertation. The candidate should not be interrupted during this presentation.
- The candidate will then respond to a brief round of questions from the audience.

The seminar notice should be forwarded to the Graduate Records Coordinator for advertising at least two weeks prior to the seminar. Seminar notices are sent to all members of the examining committee and are advertised at www.biology.ualberta.ca.

Preparing the thesis seminar notice (*From R.A. Day's "How to Write and Publish a Scientific Paper")

Basically this notice has only three components: your name, when and where the seminar will take place, and the title and abstract. It is the latter component most dealt with here.

The Title:

Few will read your entire abstract, but many will read the title. Use the fewest possible words that adequately describe the contents of the paper. Most titles are too long (remember, the title is not an abstract). Watch "waste" words such as "Studies on," "Investigations on," and "Observations on." Avoid jargon (most potential attendees will not be experts or specialists in your area). For whom are you giving the seminar? For you? Your closest colleagues? The Department?

The Abstract:

A miniversion of the paper. It should provide a BRIEF summary of the Introduction, Methods, Results, and Discussion by: i) stating principal objectives and scope of study,
ii) describing methods,
iii) summarizing results,
iv) stating main conclusions.

Write in past tense. Avoid jargon, abbreviations, and acronyms. Examine every word carefully. Do not use 200 words when 100 will do. Avoid verbal abuse; use clear, significant words rather than abstruse, verbose constructions.

10. Curriculum Vitae:

The Office of the Associate Chair (Graduate Studies) requires a copy of your most current C.V.. We require it to compile statistics and to possibly nominate you for post-defense awards.

***A Brief Supplementary Explanation of the Role and Guidelines for Examination Chairs in MSc and PhD Thesis Defense:**

- The examination chair is a non-voting member of the examination committee.
- The role of the examination chair is to ensure that the exam is conducted in accordance with FGSR and departmental rules and standards.
- The examination chair acts as a “referee” to ensure that “fairness, balance and order” have been maintained and that the interest of the student is adequately protected.
- The examination chair moderates and directs the questioning.
- At the end of the examination, the examination chair acts as a neutral member to guide the committee through the process of reaching a decision.
- The examination chair may ask questions if he/she feels that critical and pertinent questions have not been asked or addressed. Alternatively, the examination chair can request the examination committee to refocus or redirect questions to address areas as appropriate.
- If the examination chair feels that the examiners are either too hard or too easy on the candidate, he/she can call a recess to discuss this with the other examining committee members in the absence of the candidate. Likewise, any examiner can ask for a recess and raise concerns of this nature with the examination chair and other examining committee members.
- If at the end of an exam, the chair or an examiner is unhappy with the resulting rigor of the exam or its process, they should inform the Associate Chair (Graduate Studies) of the details in a memo. The Associate Chair will then investigate the issue in question, and in consultation with the Departmental Chair and FGSR take specific actions where appropriate.
- In extreme circumstances, the examination chair can adjourn the examination. In this case, the details of the adjournment and conditions for reconvening the examination will have to be filed to Associate Chair (Graduate Studies) office and to FGSR according to FGSR rules and protocol.