Structure and process of the final doctoral exam in Chemistry

The final doctoral examination in Chemistry can take place in one of two formats:

1. The student delivers an approximately 40 min public PhD seminar followed by an `in-camera` question period with the exam committee. The supervisor introduces the student before the seminar and also chairs the public questions on the seminar. The committee does not ask questions immediately after the seminar. The supervisor will then direct the members of the public to leave the room while the student and exam committee members remain. The remainder of the exam consists of 2 rounds of questions.

2. An entirely `in-camera` exam with the committee consisting of a 20 min seminar and then 2 rounds of questions by the committee.

Process

- Once the public has left the room or once the entire committee is present the Chair will open with a statement such as, *We are here for the final PhD defense of [student’s name]. I will ask the student to please leave the room while we go over your record and establish the order of questions*.

- Once the student has left the room the Chair reviews the student’s record with the committee. It is typical that the supervisor also provides some insight into the student’s program.

- The Chair should circulate a copy of the external examiner’s written report to the rest of the committee. The report will be in the file.

- The Chair calls for questions on the student’s record (offers to circulate file to examiners).

- The Chair recommends an order of questioning and informs the committee that there may be a break after the first round. The external examiner on the committee is given the opportunity to begin the questioning. The supervisor is invited to ask questions last but typically does not ask questions. It is permitted for another examiner to ask a related question during a different examiner’s question. This should be done in a clear and ordered manner. The Chair should inform the committee this is allowed.

- The Chair should inform the committee that they will be held to 10-15 minutes of question in the first round and 5-7 minutes in the second. With the committee’s input a distinct time limit should be set (e.g., 12 min in round 1 and 5 min in round 2). However, the external examiner should be allotted the time they deem necessary, i.e., no time limit (within reason). It is the Chair’s responsibility to hold the examiners to the agreed upon time.

- The student is invited back into the room.

- If the student has delivered the public seminar, the Chair informs the student on the order of questioners and then the exam begins with the external examiner.
If the student has not combined the PhD seminar with the defense, the Chair invites the student to begin their 20 min presentation. Following the presentation, the Chair informs the student on the order of questioners and then the exam begins with the external examiner.

When an external examiner cannot be present in any form, the Chair or the supervisor will ask the student questions raised by the external examiner in his/her written evaluation of the thesis.

If an examiner is taking part in the exam by video link (e.g., Skype) the Chair must ensure that the communication between that examiner and the student is clear. Typically, IST will set up the video link equipment. This should be arranged by the supervisor.

During the question period, the Chair acts as a referee to ensure that fairness, balance and order are maintained and that the interest of the student is adequately protected.

At the conclusion of the examination the student is given the opportunity to make a closing statement or ask closing questions.

After the student has left the room, the examiners deliberate. Usually the deliberation starts with a quick vote (pass or other) in the order of questioning. If votes other than pass are cast, a conversation then takes place. 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.

The decision of the examining committee will be based both on the content of the thesis and on the student's ability to defend it. The final examination may result in one of the following outcomes:

• Adjourned
• Pass
• Pass subject to revisions
• Fail

There is no provision for a final examination to be "passed subject to major revisions".

If the Examining Committee fails to reach a decision, the department will refer the matter to the Dean, FGSR, who will determine an appropriate course of action.
Adjourned: An adjourned examination is one that has been abandoned officially. A majority of examiners must agree to an outcome of Adjourned. The final examination should be adjourned in the following situations:

- The revisions to the thesis are sufficiently substantial that it will require further research or experimentation or major reworking of sections, or if the committee is so dissatisfied with the general presentation of the thesis that it will require a reconvening of the examining committee. In such circumstances the committee cannot pass the student, and must adjourn the examination.
- The committee is dissatisfied with the student'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 taking place during the examination.
- Discovery of possible offences under the Code of Student Behaviour after the examination has started.

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 student prior to reconvening the examination.
- Decide upon a date to reconvene. If the date of the reconvened 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. This new examination must be held 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 (e.g., 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 Dean of the department’s Faculty following the procedures established for this purpose.
- Advise the FGSR in writing of the adjournment and the conditions.
When the date is set for the adjourned final examination, the department will notify the Dean of the department's Faculty and the FGSR. Normally a Pro Dean attends the examination.

**Pass:** Pass is the decision given when the only revisions required are typographical or minor editorial changes. All or all but one of the examiners must agree to an outcome of Pass. If the student passes the examination, the department should submit a completed Thesis Approval/Program Completion form to the FGSR. If one of the examiners fails the student, that examiner does not have to sign this form.

**Pass Subject to Revisions:** All or all but one of the examiners must agree to an outcome of Pass Subject to Revisions. The student has satisfactorily defended the thesis but the revisions to the thesis it will not require a reconvening of the examining committee. Revision of this type can include a large number of editorial changes, additions of significant amounts of text or additions of new figures.

If the examining committee agrees to a "Pass subject to revisions" for the student, the chair of the examining committee must provide in writing, within five working days of the examination, to the student, the graduate coordinator, and FGSR:

- the reasons for this outcome,
- the details of the required revisions,
- the approval mechanism for meeting the requirement for revisions (e.g., approval of the examining committee chair or supervisor, or approval of the entire examining committee, or select members of the committee), and
- the supervision and assistance the student can expect to receive from committee members.
- A date for the revisions to be resubmitted, as negotiated with the student, but which should be no less than six weeks and no more than six months.

The student must make the revisions within six months of the date of the final examination. Once the required revisions have been made and approved, the department shall submit a completed Thesis Approval/Program Completion form to the FGSR indicating the committee decision was "pass subject to revisions". If one of the examiners fails the student that examiner does not have to sign the form. If the required revisions have not been made and approved by the end of the six months deadline, the student will be required to withdraw.

**Fail:** All or all but one of the examiners must agree to an outcome of Fail. If the examination result is a Fail, no member of the examining committee signs the Thesis Approval/Completion form.
When the outcome is a Fail, the committee chair will provide the reasons for this decision to the graduate coordinator in a letter within 2 working days of the exam. The department will then provide this report, together with its recommendation for the student’s program, to the Dean of the department’s Faculty, the FGSR, and to the student.

- The student is invited back into the room and is made aware of the decision. For decision other than Pass, the Chair and the supervisor should discuss the decision carefully with the student before leaving the room.