DEPARTMENT OF BIOLOGICAL SCIENCES
BROCK UNIVERSITY

GRADUATE HANDBOOK
October 2011

Table of Contents

Program Requirements - MSc 2
Required courses 2
Transferring from the MSc to the PhD program 2
Program Requirements - PhD 3
Required courses 3
Minimum course grades 3
Financial support 4
Composition of thesis supervisory committees 5
Schedule for Supervisory Committee Meetings 6
Monitoring of Graduate Student Progress 7
Predoctoral exam regulations 9
Conditions for the exam 9
Timing of the exam 9
General presentation guidelines for the written proposal 11
Predoctoral examining committee 12
Thesis content 14
MSc and PhD thesis procedures 15
Formatting of graduate theses 15
First Draft Submission for Tuition Reduction 15
Internal Thesis Review 15
External Thesis Review and Defence Date 16
MSc defence format 17
Examining Committee makeup 17
Format of exam 17
Possible outcomes of the exam 17
PhD defence format 18
Examining Committee makeup 18
Format of the thesis defense oral exam 18
Possible outcomes of the PhD oral exam 18
After the thesis defence 19
BIOL 5P95/7P95 September 2011 – April 2012 20

Program Requirements - MSc

Students may be admitted as full-time or part-time. Full-time programs should normally be completely in 2 years and part-time programs in 3 years.

Required courses

Students must enrol in **BIOL 5F90** each term. In addition to BIOL 5F90, students must complete a minimum of one and one-half credits of course work. Note that graduate credit is not given in courses where the final grade is less than 70%. Students are expected to achieve a minimum grade of 80% in each of the following graduate courses.

1. BIOL 5P95 – taken in the first September of the program (see BIOL 5P95 guidelines)
2. one-half credit from BIOL 5P85, 5P86, 5P87 or 5P88
3. one-half credit from BIOL courses numbered 5*(alpha)*00 or higher.

Courses are chosen in consultation with the Supervisory Committee. The thesis supervisor may not offer all the courses in a candidate's program. Additional credits may be required of candidates with insufficient preparation in the area of research specialization. When appropriate and with prior permission of the supervisory committee, courses offered outside the Department of Biological Sciences may be taken to fulfill course requirements. Depending on their background, candidates may be required to take extra courses from either the graduate or undergraduate calendar in addition to those noted above. Note that obtaining a failing grade (<70%) in a graduate course is sufficient grounds for dismissal from the program.

In addition to the above coursework, students will participate in the running of undergraduate courses in the Department of Biological Sciences at Brock University as teaching assistants for a minimum of one term (for which a graduate teaching stipend will be received).

Transferring from the MSc to the PhD program

Students who have successfully completed one year in the Brock Biological Sciences MSc program may be eligible to transfer to the PhD program upon successful completion of the Biological Sciences predoctoral examination. Students wishing to transfer will normally have completed all MSc course work within that first year with grades of at least 80% in each course. The predoctoral examination will take place after the third term but no later than the sixth term. Following the successful completion of the predoctoral exam, the graduate committee will then approve the transfer of the student from the MSc to the PhD program.

Program Requirements - PhD

A minimum of three years (36 months) of resident, full-time study is required. Students will be expected to complete all degree requirements within four years following entry into the PhD program. Students will participate in the running of undergraduate courses in the Department of Biological Sciences at Brock University as teaching assistants for a minimum of one term (for which a graduate teaching stipend will be received).

All students must complete a research project that culminates in a thesis and independent thought and work, and which represents an original contribution to scientific knowledge. There will be an oral defence of the written thesis. The student will be guided in all aspects of his or her graduate program by a supervisory committee.

Required courses

Students must enrol in **BIOL 7F90** each term. In addition, coursework is required. Note that graduate credit is not given in courses where the final grade is less than 70%.

For students entering the PhD program after completion of an MSc:

1. BIOL 7P95 – taken in the first year of the program
2. one half-credit course numbered 5*(alpha)*00 or higher, and which must not be cross-listed with a 4*(alpha)*00 course

For students who transfer from the MSc to the PhD program:

1. BIOL 5P95
2. one of BIOL 5P85, 5P86, 5P87 or 5P88
3. one half-credit course numbered 5*(alpha)*00 or higher, and which must not be cross-listed with a 4*(alpha)*00 course
4. BIOL 7P95 – taken in the first year after transfer to the PhD
5. one additional BIOL course numbered 5(alpha)00 and higher, **which may be a second, different version of BIOL 5P85, 5P86, 5P87 or 5P88 as pre-approved by the Graduate Program Director**

The thesis supervisor may not offer all the courses in a candidate's program. When appropriate and with prior permission of the supervisory committee, courses offered outside the Department of Biological Sciences may be taken to fulfill course requirements. Depending on their background, candidates may be required to take extra courses from either the graduate or undergraduate calendar in addition to those noted above. Note that failing grades (<70%) in graduate courses is sufficient grounds for dismissal from the program.

Minimum course grades

0-49%	Fail
50-69%	Pass – no graduate credit (course must be replaced or retaken if graduate credit is required)
70-79%	B – graduate credit awarded, insufficient for transfer from MSc to PhD
80-100%	A – required for transfer from MSc to PhD

Financial support

Full time students (MSc and PhD) will normally be supported by some combination of provincial or federal scholarships, a research assistantship paid from the research operating grants of supervising faculty, a graduate fellowship from the University, and teaching assistantships in undergraduate courses in the Brock Department of Biological Sciences. In addition, international students may receive bursaries to help offset the cost of higher tuition fees. Students in financial need may qualify for additional bursaries. The purpose of financial support is to allow students to focus on their studies, rather than on undertaking employment unrelated to their studies. The flip side of this is that students should not regard their financial support as an entitlement – it should be regarded as an incentive that needs to be earned.

Note: Graduate fellowships awarded by the Office of Graduate Studies differ according to program and according to whether students receive external fellowships. Students should make sure that they understand exactly how they will be supported and for how long.

Based on NSERC guidelines, the normal periods of financial support from supervisors' grants (in the form of research assistantships) are 2 years for programs that culminate in an MSc thesis and 4 years for programs that culminate in a PhD thesis (which includes MSc time for students who switch).

Research assistantships are normally $9000 per year. Financial support from supervisors' grants is contingent upon availability of funds and on demonstration of satisfactory work effort and scientific progress. When students are coming near to the end of their period of financial support, supervisors and students should discuss whether further financial support will be provided.

Composition of thesis supervisory committees

All students are supervised by a thesis committee. Thesis committees usually consist of the student's research supervisor and two additional faculty members from the Department of Biological Sciences, one of whom will serve as Chair of the Committee. Exceptions to this structure occur when the supervisor's primary appointment is not in Biological Sciences.

Thesis committees will be chosen according to the following criteria, based on suggestions made by supervisors and subject to agreement by requested faculty. The Graduate Program Director will ensure that the following criteria are fulfilled in assigning thesis committee duties:

1. There are 4 major research areas in the Department. At least one committee member will be from the same research area as the student and supervisor.
2. Thesis supervisory committees consist of the supervisor or co-supervisors plus at least two members of the Biology Graduate Program faculty. At least one of the additional committee members should be from a cognate discipline.
3. Cross-appointed faculty in Biological Sciences may supervise graduate students and may be members of thesis supervisory committees.
4. Adjunct faculty in Biological Sciences may co-supervise graduate students with faculty from Biological Sciences and may be members of thesis supervisory committees.

Schedule for Supervisory Committee Meetings

Students are responsible for convening their committees according to the following schedule:

1. First meeting (planning): preferably within 2 months, no later than 4 months after initial registration
2. First progress meeting: second or third term after initial registration
3. Subsequent progress meetings: minimally one per year.

Supervisory committee meetings must also be held to discuss predoctoral exam topics and for major changes in research plans.

At each meeting, students should present their research plans and progress in the form of a talk. The presentation should be approximately 30 minutes in length and contain the following information:

1. Title of thesis
2. Project objectives/questions/hypothesis to be researched
3. Background literature discussion to put the project into context of the current understanding in the research field
4. Methodology to be used to answer the research questions
5. Timeline for project objectives
6. Course work to be taken over the next year

Monitoring of Graduate Student Progress

Graduate students are responsible for convening their committees for regular ~~committee~~ meetings.

The first meeting is a research planning meeting. Planning meetings should take place in the first two months after initial registration and no later than the 4th month. A second meeting to report initial research progress should be held by the end of the first 12 months of a student's program. Thereafter, meetings should be held at least once per year, or more often if necessary. A committee meeting is also required to plan for the predoctoral exam, and when major changes to a student's program are contemplated, such as a major change to the student's proposed research project.

Graduate students receiving external scholarships must also have a satisfactory yearly Graduate Student External Progress Report Form sent to the scholarship agency by the Graduate Studies Office in order to continue receiving external scholarship funding. This form is available from the university graduate studies website.

Graduate student committee meetings must be documented with the Graduate Student Progress Report Form (available on the Biology web page). **The outcome of the meeting will be summarized by the committee as Excellent, Satisfactory, or Unsatisfactory.** Students should be aware that it is their responsibility to make sure committee meetings take place, **and that their** progress is monitored by the Biology Graduate Committee.

It is very important that students convene their committees and present evidence of satisfactory research effort and progress. The Graduate Program Committee regularly checks individual student progress as reported on the Graduate Student Progress Form. If no evidence of satisfactory progress is provided, then the Committee will assume that this is because the student has not being making progress. **Also, from time to time, the Faculty of Graduate Studies asks the GPD to confirm satisfactory progress, for instance, when considering applications for bursaries.**

Academic Probation

The following is an important recent change to the FHB Section 14, Graduate Studies and this text is also found in the Graduate Calendar. According to this regulation, when a student's progress is unsatisfactory, supervisory committees can recommend to the Graduate Program Director and Graduate Program Committee, that students be placed on academic probation or even asked to leave the program.

> In graduate programs with a research exit requirement (thesis, major essay/research paper), satisfactory academic progress during the research phase will be determined through academic progress reviews by the graduate program committee (normally once per term) as outlined in the program's Graduate Handbook. An Unsatisfactory academic progress decision, as determined by the graduate program committee, may result in a program's decision to place the student on academic probation for the subsequent term or a request for required program withdrawal.

Predoctoral exam regulations

Enrolment in the Doctor of Philosophy program requires the successful completion of a predoctoral examination. The predoctoral examination will include an oral exam on the student's written research proposal, including the scientific background appropriate to the proposal. The research proposal must be written by the student and must not be read or edited by the Supervisor prior to its final submission, to ensure that the proposal reflects the student's own work. The research proposal must focus on a topic that is not the student's primary research topic but which is in a field related to the PhD research topic. The topic should be chosen in consultation with the thesis supervisory committee at a meeting preceding the predoctoral exam. The thesis supervisory committee will fill out the Predoctoral Recommendation Form (available on the Biology web page) to approve the topic of the exam and forward this to the Graduate Program Director. The student will submit five copies of the written proposal to the Graduate Program Director at least two weeks prior to the scheduled examination date.

Conditions for the exam

Before permission is given for the predoctoral exam to proceed, students (both MSc and PhD) should convene their supervisory committee in order to convince them that sufficient research progress has been made up to that point; this is particularly critical for MSc students as they must convince their committees that their academic abilities and achievements up to that point justify switching to the PhD program without first producing an MSc thesis. The supervisory committee will then advise the Graduate Program Director of their decision to grant permission for the predoctoral examination to proceed.

Appeals for exceptions to the above rules require that the thesis supervisory committee present a request supported by appropriate documentation to the Departmental Graduate Studies Committee, who will decide whether or not to grant the exception. The decision of the Departmental Graduate Studies Committee is final.

It is desirable but not mandatory that PhD students complete their course requirements before attempting the predoctoral exam. MSc students must complete all MSc course work with grades of at least 80% **in each course**. Exceptions to this rule may be made if required courses have not been offered in time for students to complete this requirement.

Timing of the exam

For students who enter directly into the PhD program, the predoctoral exam will take place after the second term but no later than the sixth term (third or fourth term is recommended). For students enrolled in the MSc program who wish to switch to the PhD program, the predoctoral exam will take place after the third term but no later than sixth term.

Important: PhD students who fail to arrange the predoctoral exam before the end of their sixth term, will be deemed to have failed their first attempt at the exam.

Content of predoctoral research proposal

The proposal will follow NSERC guidelines. Consult the NSERC website for information on how to write a good proposal. Also, make sure you obtain a copy of a successful NSERC grant written by your supervisor as an example of how a proposal should be framed.

The predoctoral research proposal must be written by the student and must not be read or edited by the Supervisor prior to its final submission, to ensure that the proposal reflects the student's own work. However, students should feel free to solicit input and advice on their proposals from other students. Indeed, this input process is a vital part of grantsmanship.

Note that the proposal must be understandable to a biologist in a different research field.

1. **Topic**

The predoctoral proposal should be on a topic related to but not the same as the PhD research topic. The proposal should be narrow enough in scope that it represents a project that could be used as a backup should the student's primary research project be abandoned, or could be used as a post-doctoral project. As such the topic should be focussed enough that the research proposed could be accomplished in a 3-5 year timeframe.

The topic must be chosen well in advance of the predoctoral exam, and in consultation with the thesis supervisory committee. This information should be relayed to the Graduate Program Director (the appropriate form may be found on the Biology Graduate Studies website). The proposal will be a maximum of 20 pages, double-spaced (see General Presentation Guidelines for further detail).

2. **Summary of proposal in lay terms**

The summary is intended to explain the proposal in language that the public can understand.
Using simple terms, briefly describe the nature of the work to be done. Indicate why and to whom the research is important, the anticipated outcomes, and how your field will benefit. In general, it is desirable to avoid field-specific jargon wherever possible in your proposal (suggested length, 1 page double-spaced).

3. **Proposal**

Using the headings below, describe the research to be supported. Provide details on:

- objectives of the research, both short and long term; hypotheses to be tested, specific predictions (suggested length, 2 pages, double-spaced)
- literature pertinent to the proposal; (suggested length, 5 pages double-spaced)
- methods and proposed approach; (suggested length, 10 pages double-spaced)
- anticipated significance of the work. (suggested length 2 pages double-spaced)

General presentation guidelines for the written proposal

- Print must be in black ink and of letter quality.
- Text must be double-spaced, with no more than six lines per inch.
- If you use a type size measured in pts, it must be no smaller than 12 pts.
- Use white paper, 8 1/2 x 11 inches (21.5 cm x 28 cm), portrait format, with a single column, unless specified otherwise.
- Set margins at 3/4 of an inch (1.9 cm) (minimum) all around.
- Number your pages sequentially.
- Print on one side of the page only.
- The maximum number of pages allowed is 20 for text, including any figures and tables (if deemed necessary); there is no page limit for references.

All text, including references, must conform to these standards. Incomplete proposals and/or proposals that do not meet the presentation standards may be at a disadvantage. Avoid using acronyms and abbreviations or explain them fully.

References

- Please use standard and consistent formatting for references.
- Do not refer readers to Web sites for additional information on your proposal.
- Do not introduce hyperlinks into your list of references.
- Make sure you have actually read the references in your proposal – you may be questioned on them in the exam!

Predoctoral examining committee

The Committee consists of the student's supervisory committee plus two faculty members from the Department of Biological Sciences. A majority of the committee members must be tenured faculty, one of whom shall chair the exam.

Exam procedures

The examination will consist of two parts. One week prior to the exam date, committee members will submit their evaluations of the written research proposal to the Graduate Program Director. In order for the exam to proceed, all members of the examining committee must agree that the written proposal is acceptable.

The written proposal must be deemed acceptable and sufficient for oral examination by **all** members of the evaluation committee prior to the seminar and defense. The deadline for evaluation will be three days prior to the scheduled oral exam. The submission of a proposal that is deemed not to demonstrate the required level of achievement will result in cancellation of the oral exam component. This outcome is equivalent to "Probation" (PhD students) or "Remain in MSc" (MSc students).

Exams are scheduled for a 3 hour duration, which is longer than most exams last. The exam begins with a 10 minute oral presentation by the candidate, highlighting and summarizing the proposed research. This presentation is followed by rounds of questions from the committee, beginning with the two faculty who do not normally sit on the supervisory committee, and ending with the supervisor. Normally, two rounds of questioning are sufficient, but three rounds of questioning may be necessary.

Predoctoral exam outcomes

Following the oral exam, the final outcome of the exam will be determined by vote of the committee, as noted below. Voting will proceed as follows (co-supervisory votes together count as a single vote).

1. Students registered in the PhD program: possible outcomes are **Withdraw, Probation,** or **Continue.**

· **Withdraw from PhD program** - two or more committee members vote to fail (the candidate will be required to withdraw from the program by the end of the current term). This outcome will normally only apply when the committee deems it extremely improbable that the student will be able to independently plan, carry out, and publish a research project.

· **Probation** - at least 4 members of the committee vote for probation. The student has not demonstrated sufficient understanding of the research process or satisfactory understanding of the research topic, and/or has not demonstrated sufficient ability in either writing or communications skills. The student is not yet ready to independently plan, carry out, and publish a research program. The student will be required to retry the predoctoral exam within three months. Students may retry the examination only once.

· **Continue** - at least 4 members of the committee vote for a pass. The student has demonstrated sufficient understanding of the research process, satisfactory understanding of the research topic, and has demonstrated satisfactory scientific, written and oral communications skills, such that the student is clearly ready to independently plan, carry out, and publish a research program. The student may continue in the PhD program.

2. Students registered in the MSc program: possible outcomes are **Remain in MSc** or **Transfer to PhD**

· **Remain in the MSc program** - two or more committee members vote that the candidate will be better served by completing an MSc thesis prior to undertaking a PhD. The student has not demonstrated sufficient understanding of the research process or satisfactory understanding of the research topic, and/or has not demonstrated sufficient ability in either writing or communications skills. The student is not yet ready to independently plan, carry out, and publish a research program.

· **Transfer to PhD** program - at least 4 members of the committee vote for a pass. The criterion for a **pass** is clear evidence of advanced intellectual ability and accomplishment, as indicated by the written proposal and oral exam, such that the committee believes the student will not benefit from the experience of writing an MSc thesis. The student has demonstrated sufficient understanding of the research process, satisfactory understanding of the research topic, and has demonstrated satisfactory scientific, written and oral communications skills, such that the student is clearly ready to independently plan, carry out, and publish a research program.

Thesis content

The following are general guidelines that reflect what Biology supervisory committees generally deem to be reasonable minima and maxima for thesis content. It is not necessary to include all of the work you did as a graduate student. Your goal is to demonstrate sufficient achievement to justify awarding of the degree.

MSc thesis: General introduction, 1-2 data chapters (or chapters representing manuscripts, unpublished or published), general discussion, general conclusions, references, appendices as necessary. Total thesis length about 100-125 pages.

PhD thesis: General introduction, 3-5 data chapters (or chapters representing manuscripts, unpublished or published), general discussion, general conclusions, references, appendices as necessary. Total thesis length about 150-200 pages.

Students are responsible for convening their committees in order to regularly apprise them of their progress. The committee will decide when the student has collected sufficient data to complete a thesis. The committee's decision will be indicated on the Graduate Student Progress Form (available from the Biology web site) and forwarded to the Graduate Program Director.

MSc and PhD thesis procedures

Formatting of graduate theses

The following guidelines are intended to **complement** the requirements of the Faculty of Graduate Studies. An important difference between Biology and FGS is that Biology committees regularly request that all references be collated at the end of the thesis, to improve the clarity of the monograph and to waste less paper. Students who insist on formatting theses their own way are likely to encounter opposition and irritation from committee members (hint: don't do it!).

1. Print must be in black ink and of letter quality. All text must be double-spaced; tables and references may be single-spaced. If you use a type size measured in pts, it must be no smaller than 12 pts. Colour may be used in figures if black and white would obscure the meaning.

2. All right-hand pages except the title page should be numbered. These should be numbered in one continuous sequence in Arabic numerals from one onwards. This sequence should include everything bound in the volume.

3. All typing and other costs of preparing the thesis are the responsibility of the student. Students are not permitted to use the departmental laser printer for printing their thesis, but can use the printer in the graduate student lounge. Students are not permitted to use the departmental photocopier for the duplication of their theses.

4. Published manuscripts are likely to have different formatting. When included as thesis chapters, one consistent format should be used throughout the thesis, and all references should be compiled at the end of the thesis.

First Draft Submission for Tuition Reduction

Once the student has completed a first draft of the thesis and it has been reviewed by their supervisor, the student can hand in this first draft to the Graduate Program Director along with the first draft form from graduate studies (http://www.brocku.ca/gradstudies/forms/) to apply for the first draft tuition reduction. **The submission to the GPD should be as a pdf document attached to an email. Note that the tuition reduction is only for one term.**

Internal Thesis Review

Once the supervisor agrees that the thesis is ready for internal review, an email to that effect should be forwarded to the Graduate Program Director.

The student should ascertain whether the supervisor wishes a printed copy of the thesis for internal review or whether an electronic version would suffice. Otherwise, one copy should be submitted for each committee member. All copies should be submitted to the Graduate Program Director, as well as a PDF version.

The GPD forwards the thesis to the committee who will evaluate it and decide whether it is ready for external review. The internal review process normally takes three weeks. Each committee member forwards comments to the Graduate Program Director who forwards them to the student. The thesis may be

submitted for external review once required revisions have been made, as recommended in the internal review.

External Thesis Review and Defence Date

Final copies of the thesis are handed into the Graduate Program Director. **The number of copies required is 5 for MSc students and 6 for PhD (plus one extra copy if student is co-supervised).**

The student should forward an electronic copy of the thesis title and abstract to the GPD.

For PhD theses, a list of potential Brock external examiners (who must be tenured members of the Graduate Faculty, but not members of the Biology graduate program) should also be submitted. The Graduate Program Director chooses the Brock external examiner.

The supervisor and student must also complete a list of three potential external examiners and their contact information, ranked in order of preference. The list of potential external examiners is forwarded to the appropriate Dean. Once the external examiners have been named, a defence date will be set. The date will normally be 4-6 weeks from the external examiner notification date. Copies of the thesis will be distributed to the committee. Students should keep a copy for themselves and bring it to the defence.

MSc defence format

Examining Committee makeup

– examining committee chair (Dean of Mathematics and Science or Dean's delegate), external examiner, thesis supervisor, and two departmental representatives (normally the two departmental members that were on the supervisory committee).

Format of exam

- Exam chair introduces committee and candidate, explains the format of the defence.
- Candidate presents a research seminar, around 30 minutes in length, followed by a short period in which the floor is open to questions from the audience.
- After a short break, the examination begins. Audience may remain but may not ask questions.
- Order of questioning is usually external examiner, 1st departmental representative, 2nd departmental representative, supervisor. The chair of the examining committee is not required to participate in the questioning period.
- The questioning period is normally about 2 hours, consisting of two rounds of questioning by the examining committee. However, the exam may be longer if the committee deems it necessary.
- When the committee is satisfied with the questioning, the Chair thanks the candidate and the audience, who then leave the room so that the Committee may deliberate *in camera.*

Possible outcomes of the exam

All members of the examining committee will vote on the outcome of the exam, except the Chair, who is the Associate Dean of Mathematics and Science or designate) for a total of 4 votes or 5 votes if the student is co-supervised.

Fail - at least 3 members of the committee vote to fail
Pass - at least 3 members of the committee vote to pass

In the event of a tie vote, the vote of the external examiner will be the outcome of the exam.

PhD defence format

Examining Committee makeup

– examining committee chair (Dean of Graduate Studies or delegate), external examiner, Brock internal examiner, thesis supervisor, and two departmental representatives (normally the two departmental members who were on the supervisory committee).

Pass - at least 3 of 4 or 4 of 5 voting members of the committee vote to pass. The alternative is Fail.

In the event of a tie vote, the vote of the external examiner will be the outcome of the exam.

Format of the thesis defense oral exam

- Exam chair introduces committee and candidate, explains the format of the defence.
- Candidate presents a research seminar, around 30 minutes in length.
- Floor is open to questions from the audience.
- This is followed by a short break (and refreshments).
- The oral defence proceeds. Audience may remain but may not ask questions during the defence.
- Order of questioning is usually external examiner, internal examiner, 1st departmental representative, 2nd departmental representative, supervisor. The chair of the examining committee is not required to participate in the questioning period.
- The questioning period will normally consist of two rounds of questioning by the examining committee, but additional rounds may be required.
- When the committee is satisfied with the questioning, the Chair thanks the candidate and the audience, who then leave the room so that the Committee may deliberate *in camera.*

Possible outcomes of the PhD oral exam

All members of the examining committee, excluding the committee chair, will vote on the outcome of the exam, for a total of 5 votes (6 votes if the student is co-supervised). The Chair (who is the Dean of Graduate Studies or the Dean's designate) does not vote.

Pass - at least 4 of 5 or 5 of 6 voting members of the committee vote to pass. The alternative is Fail.

In the event of a tie vote, the vote of the external examiner will be the outcome of the exam.

After the thesis defence

A thesis defence is the last major step before convocation, but there are several things that still need to be done after the defense in order for students to graduate.

1. A variety of copyright forms must be filled out and signed by the student. Usually this happens immediately following the thesis defense.

2. The committee may require thesis revisions. These are mandatory and must be submitted by the date decided on at the exam. The exam decision form that is signed by the committee, is only signed by the supervisor after the revisions have been submitted.

3. Students should supply their supervisors with copies of the data used in the thesis, as well as other data that were collected in the course of the graduate program, even if they were not included in the thesis. Supervisors are co-owners of data produced in their research labs. Failure to provide data files, copies of field notes, copies of lab books, etc. as requested, may result in a delay in the processing of final paperwork to enable convocation.

Graduate Studies and the University may have additional requirements, such as payment of outstanding fees.

BIOL 5P95/7P95 September 2011 – April 2012

Instructors:

5P95 Miriam Richards
7P95 Adonis Skandalis

This year the course will focus on and train students in the preparation and evaluation of research proposals in the format required for NSERC Discovery grants. Both the proposal preparation and the proposal evaluation will be done as if these are real submissions to NSERC. We will have group evaluations of all students' proposals. Expectations for 7P95 will be higher in keeping with the greater experience of PhD students.

Course components and due dates - revised

	BIOL 5P95		BIOL 7P95	
	Due date	Marks	Due date	Marks
Proposal 1		20		30
Evaluation 1		20		20
Proposal 2	TBA	40	TBA	40
Evaluation 2	TBA	20	TBA	10
Seminar attendance		mandatory		mandatory

Note: Departmental seminar attendance is mandatory. Students must attend a minimum of 8 departmental seminars per term. Alternative seminars may be substituted with prior permission from the instructors. Conference attendance does not count. Final grades will not be submitted for students with insufficient seminar attendance.

Research proposals

Students are free to choose any topic except the topic of their predoctoral exams. are encouraged to obtain and read real NSERC proposas in addition to reading the NSERC guidelines on the NSERC websites.

Biology 5P95: Proposal 2 will be a revision of Proposal 1 taking into account the comments and suggestions made in Evaluation 1. Substantial improvement will be expected. Proposal 1 will not include a budget justification, but Proposal 2 must include a budget justification.

Biology 7P95: Each proposal must be on a separate topic. Both proposals will require a budget justification.

Proposals will be evaluated based on the following general criteria:

1. Clearly written, jargon-free text, including sufficient background to make the proposal clear to biologists in a different discipline.

2. Clearly stated, realistic objectives and hypotheses.

3. Feasible research program and projects with clear long and short-term goals
4. Flexible research design to deal with setbacks or necessary changes to projects as they may arise.
5. Realistic timetable (3-5 years).
6. Realistic budget and work allocation to collaborating personnel.

Proposal evaluations

The class will act as a grant panel. All proposals will be read and ranked by all members of the class. In the group evaluation, each proposal will be presented to the class by a student other than the author of the proposal. The presentation will be based solely on the proposal and there must be no prior consultation between the author and the presentation. The role of the presenter is to convince the remainder of the panel of the merits and demerits of the proposal.

The presenter's grade for the evaluation will be based on how well the proposal is evaluated, including presentation of both positive and negative aspects.

Plagiarism

Plagiarism in any form will not be tolerated and will be reported to the appropriate Deans. If you have any questions about appropriate ways to present material, you should discuss the matter with us before submission. Nothing is plagiarism until it is submitted.