



Department of Laboratory Medicine & Pathology

**INDEPENDENT
GRADUATE PROGRAM HANDBOOK**

September 2017

Dear Applicants, Graduate Students, Faculty Members and Supervisors:

The Department of Laboratory Medicine & Pathology (LMP) graduate studies program is proud to offer its students a multidisciplinary research environment where collaborations between clinical and basic research faculty promotes creativity and a desire for excellence. This positive environment for scientific inquiry is supported by the modern research laboratories and state-of-the-art instrumentation and resources.

This Handbook brings together guidelines and forms to assist both current and prospective students as well as supervisors with the planning and management of graduate training in Laboratory Medicine & Pathology.

I hope the Handbook will serve as a valuable resource for you, but please do not hesitate to contact the LMP graduate studies office directly at any time should you have concerns or questions.

Sincerely,

Monika Keelan, PhD
Associate Professor | Graduate Coordinator

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1 GRADUATE STUDIES PROGRAM

1.1 Vision, Mission, and Values

Vision

To be a leader in the development of exceptional researchers and clinical scientists for meeting the health challenges of tomorrow

Mission

To deliver outstanding graduate education experiences and professional training

Values

Academic excellence: developing intellectual capacities for scholarly achievement

Research excellence: instilling independence, creativity and passion for discovery

Student-centered culture: delivering innovative education that engages active student learning, as well as offering supportive strategies to manage program requirements

Training environment: offering a stimulating multidisciplinary environment guided by dedicated faculty and staff in state-of-the-art facilities with leading-edge technologies

Communication excellence: encouraging effective dissemination of knowledge through teaching, scientific presentations and publications

Collaboration: promoting a cohesive and interactive multidisciplinary environment

Professional development: fostering networking opportunities, career development, citizenship, community service and mentoring

1.2 Overview

Our thesis-based master's and PhD programs offer students a multidisciplinary research environment that promotes creativity and leads to academic excellence. Often this takes form in collaborative thesis research between our innovative basic and clinical research faculty, thus creating opportunities for world class research that cannot be established elsewhere.

Program requirements include coursework, presentations and seminars, and an approved research project that culminates in a written thesis. Course requirements are flexible, allowing us to tailor our training to match the needs of our diverse students. Approved courses offered by other departments may be included in the candidate's program.

Research areas are diverse:

- analytical and environmental toxicology
- biopreservation (cryobiology)
- molecular, anatomical, and cancer pathology
- bioanalytical technology
- virology and microbiology, and
- hematology, hematopathology and transfusion medicine.

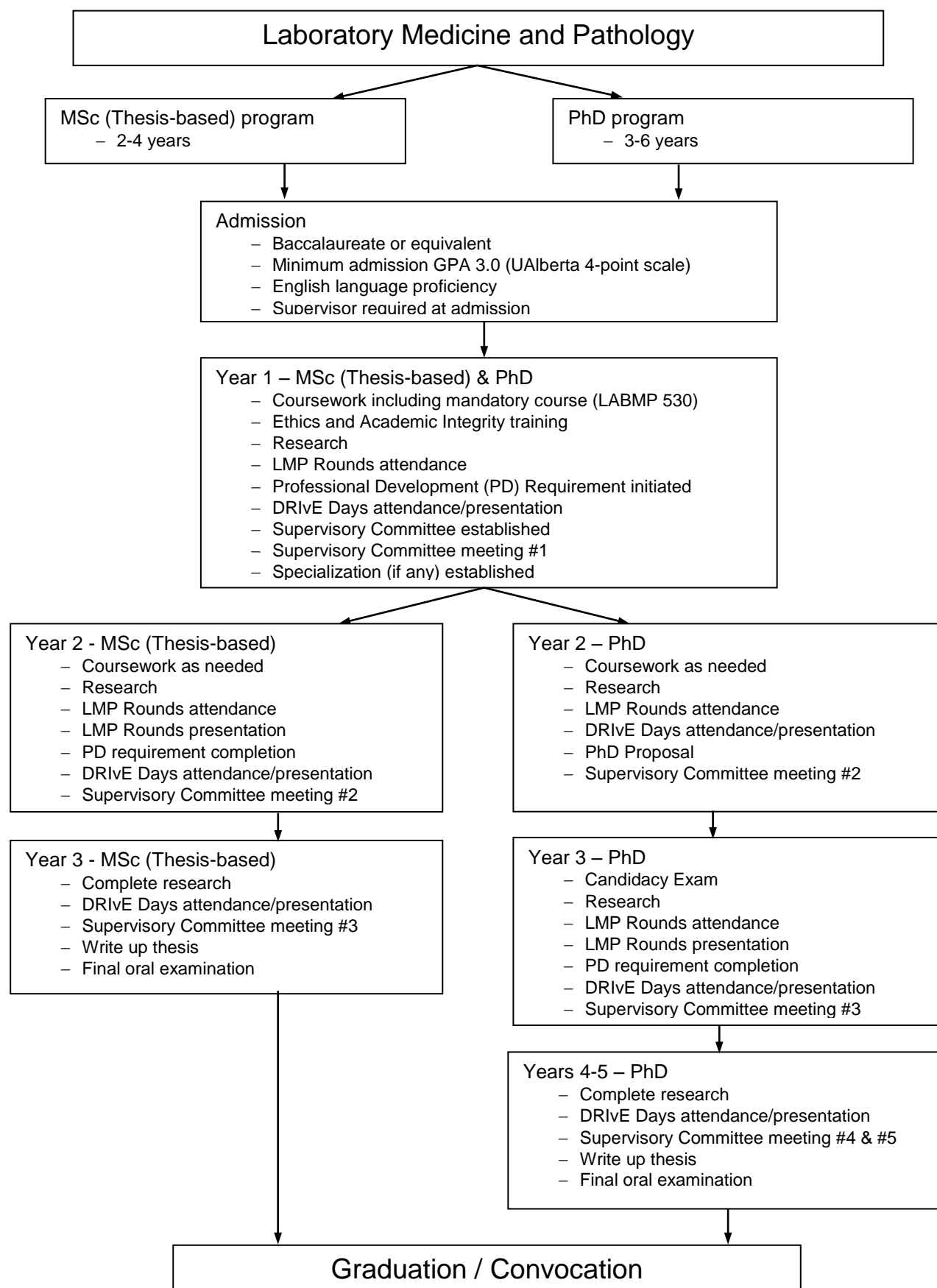
Programs and Specialization

All students are initially admitted to the general master's or doctoral program. In consultation with their supervisor / supervisory committee, they may later choose to specialize in one of the following:

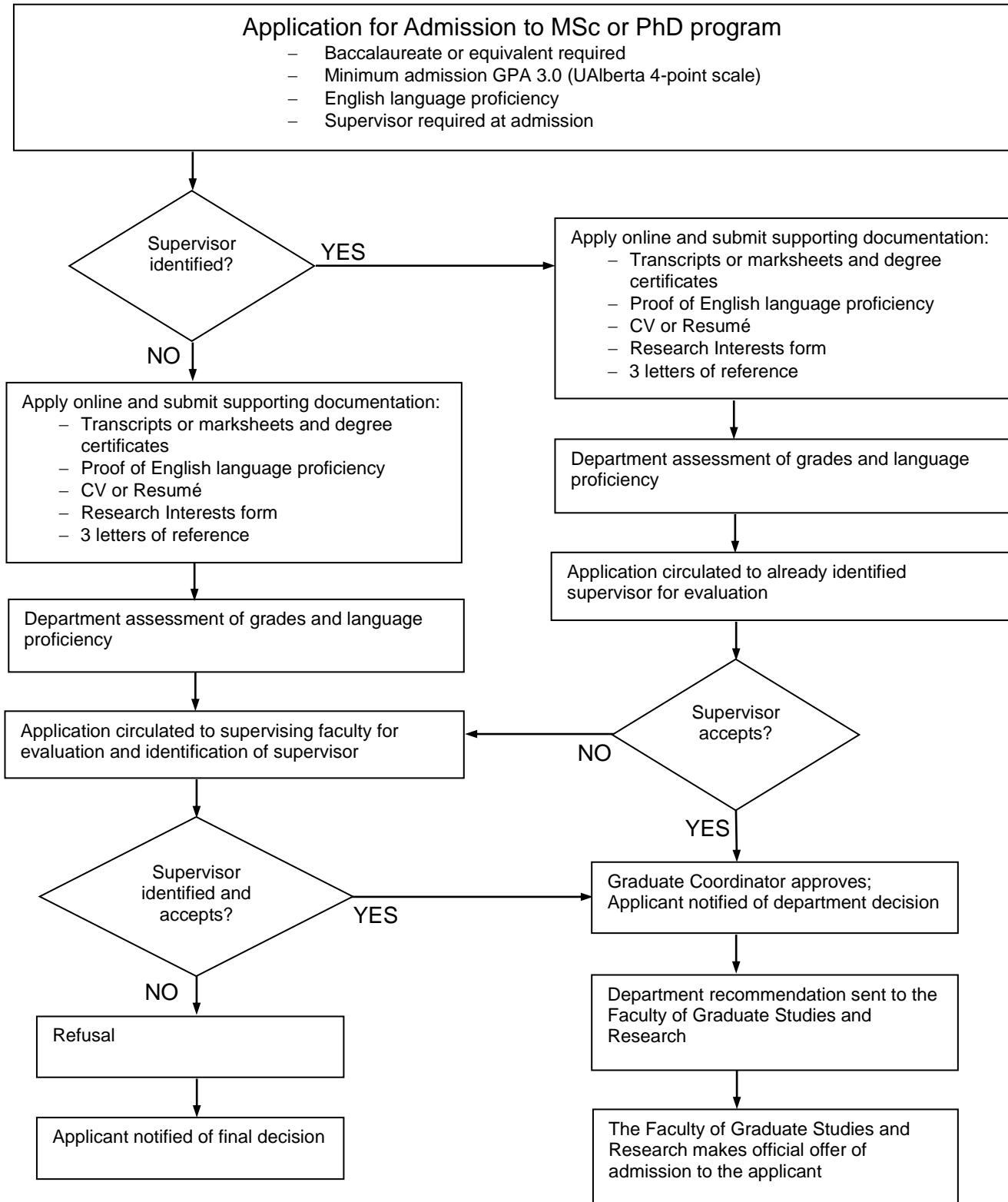
- Analytical & Environmental Toxicology
- Biopreservation
- Molecular Pathology

Research Facilities

The Department of Laboratory Medicine and & Pathology has ample modern research space in the Heritage Medical Research Centre, the Canadian Blood Services Centre, the Clinical Sciences Building, the Medical Sciences Building, the Walter C. Mackenzie Health Sciences Centre, the Katz Group Centre for Pharmacy and Health Research, Innovation, the Cross Cancer Institute, and the Li Ka Shing Centre for Health Research. The department is equipped for molecular biology, blood chemistry analysis, gas and high-pressure liquid chromatography, mass spectrometry, environmental analysis, fluorescence and electron microscopy, computerized image analysis and flow cytometry.



2 APPLICATION AND ADMISSION



2.1 Requirements

The Graduate Studies Committee has approved the following admission requirements for the graduate programs offered by the Department of Laboratory Medicine & Pathology (LMP). These requirements exceed the minimum requirements of the Faculty of Graduate Studies and Research (FGSR) in order to ensure that the best candidates are accepted into the Department of Laboratory Medicine & Pathology and that the excellence of the program is maintained.

2.1.1 Academic Requirements

Candidates must hold a baccalaureate or its academic equivalent from an academic institution recognized by the University of Alberta to enter this program. If accepted for admission, students without a Master's degree are generally enrolled as candidates for the degree of MSc. Transfer to the PhD program may be made before completion of the MSc when approved by the department. With the approval of the graduate coordinator and prospective supervisor, direct entry to the PhD program without a Master's degree is possible for exceptional candidates.

The required minimum admission grade point average (GPA) is 3.0 out of 4.0 on the University of Alberta-based scale (based on the last 60 units of course work or the equivalent). All transcripts that use a different grading scale will be assessed for equivalency. FGSR provides guidelines for [minimum academic requirements for international applicants](#), and applicants must meet or exceed these requirements.

2.1.2 Language Requirement

LMP requires proficiency in English prior to acceptance in the program.

- Applicants must submit proof of English language proficiency (ELP) if they do not hold a degree from countries or international universities listed on FGSR's [exemptions](#) page. Five ELP examinations are recognized: TOEFL, IETLS (Academic), PTE (Academic), MELAB and CAEL.
- Minimum scores required are:
 - internet-based TOEFL score of 95 with at least 20 per section; or
 - paper-based TOEFL score of 570; or
 - IELTS (Academic) score of 7.0 with at least 6 on each band; or
 - PTE (Academic) score of 65; or
 - MELAB score of 91; or
 - CAEL score of 70 with at least 70 on each subtest.

2.2 Identification of Supervisor

LMP cannot admit an applicant until a qualified faculty member: (1) agrees to supervise and take that applicant as a student, and (2) has sufficient funding to do so. As such, applicants are encouraged to review faculty profiles/research and consult directly with those whose area of research is of interest. If a supervisor has not been identified at the time of application, the department will endeavour to find one for the applicant, but chance of admission tends to be lower in these cases.

When looking for a supervisor, applicants are encouraged to email those supervisors with whom they would like to study, include transcripts and CV, and tell why they'd like to work with that particular supervisor - why that supervisor's research is of interest, what the applicant's background is, what their goals are, how they could fit in to that particular lab. Target email messages specifically to the

supervisor being contacted (i.e. the same generic message sent to each researcher may not be as effective as one that is targeted to a specific person).

2.3 Application and Supporting Documents

Applications are submitted via FGSR's [online graduate application system](#).

Except for letters of recommendation, all supporting documentation is uploaded by the applicant during the online application process. If admitted, official academic documents must be sent directly from the applicant's educational institutions to the Faculty of Graduate Studies & Research.

Supporting Documents:

- official transcripts or marksheets and degree certificates from each university or post-secondary institution previously attended
- curriculum vitae or Resumé (do not use the University of Alberta's CV Form)
- completed Research Interests form.
- proof of English language proficiency (if necessary).
- three letters of recommendation. As part of the online application, the applicant supplies the names and email addresses of referees and these referees will be invited to submit references either via an online form or uploading a letter (the reference letter template or regular letters are accepted).

2.3.1 Application deadlines

Canadian and permanent resident applicants must submit their application and ALL supporting documentation according to the following schedule:

For Admit Term	Submission Deadline:
Fall (September)	August 1
Winter (January)	November 15
Spring (May)	April 1
Summer (July)	June 1

International applicants must submit their application and ALL supporting documentation according to the following:

For Admit Term	Submission Deadline:
September (Fall)	May 15
January (Winter)	September 15
May (Spring)	January 15
July (Summer)	March 15

International applicants generally need plenty of time (up to six months in some cases) to make arrangements to enter Canada and are advised to keep this in mind when applying.

In all cases, submission of application packages well in advance of the listed deadlines is encouraged.

2.4 Admission Decision

After a complete application package has been received, transcripts are assessed. If the minimum academic requirement and the English language requirement (if necessary) are met, the application is circulated for consideration to suitable Faculty members.

Faculty members will contact applicants they are interested in for an interview (by phone, electronically, or in person).

Subsequent to the interview, a faculty member wishing to take the applicant as a student notifies the LMP Graduate Program office and confirms that he or she (1) has the required stipend support for the student, (2) has operating funds sufficient to support the student's research, and (3) has interviewed the applicant. The LMP Graduate Coordinator considers the supervisor's request and, if approved, a recommendation for admission is sent to the FGSR. Only the FGSR extends the official offer of admission.

If more than one faculty member is interested in taking an applicant as a student, the final decision of supervisor lies with the applicant.

If no faculty member has expressed an interest then the application is denied and a refusal letter is sent to the applicant.

3 GUIDELINES AND RESPONSIBILITIES

3.1 Graduate Students

Graduate students are ultimately responsible for their own programs and expected to become familiar with all regulations and deadlines relating to their program. FGSR's [Graduate Program Manual, Section 1.1](#) outlines graduate student responsibilities.

3.2 Graduate Student Supervisors

Faculty members undertaking supervision of a graduate student agree to abide by the principles outlined in this document.

Supervisors are established prior to admission., and an [Appointment of Supervisor\(s\) and Supervisory Committee](#) form is submitted after the student's program has begun.

3.2.1 Qualifications of Supervisor

In the Department of Laboratory Medicine & Pathology, the Graduate Coordinator recommends the suitability of individual faculty members to act as graduate student supervisors.

FGSR requires that each of the following criteria must be met by at least one of the supervisors:

- a) be a tenured, tenure-track, or retired faculty member, or a Faculty Service Officer, of the University of Alberta;
- b) be active in the general subject area of the student's research;
- c) demonstrate continuing scholarly or creative activity of an original nature; and
- d) either hold a degree equivalent to or higher than that for which the student is a candidate, or have a demonstrated record of successfully supervising students for the degree.

Supervisors who do not meet one of these criteria may be appointed provided that a departmental justification (with the proposed supervisor's CV) is put forward to the Dean, Faculty of Medicine and Dentistry for approval. For supervisors from outside the University of Alberta, there should be an indication of the means by which meaningful interaction can be maintained.

[\(FGSR Grad Program Manual Section 8.1.3\)](#)

There must be no conflict of interest between supervisor and student. Any personal relationships that alter or affect this academic relationship may constitute a conflict of interest (e.g., familial or intimate relationship, business relationship). Compliance with the University of Alberta's [Conflict Policy – Conflict of Interest and Commitment, and Institutional Conflict](#) is mandatory.

The following are general guidelines which complement the FGSR guidelines. The prospective supervisor:

- should have a successful record of graduate supervision;
- must have adequate time to supervise each prospective graduate student;
- must be capable of supervising the number of graduate students proposed;
- is expected to have adequate research funding for the proposed project, of a type that ensures the academic freedom of graduate students;
- must have the necessary facilities and resources available for graduate student research and provide an appropriate academic environment.

The requirement of a second supervisor for any student is subject to the discretion of the Graduate Coordinator or Department Chair.

3.2.2 Multiple Supervisors

For New Supervisors

For prospective supervisors lacking experience in graduate supervision, it is the policy of the Department of Laboratory Medicine & Pathology that there is a second supervisor who is an experienced faculty member. The primary supervisor is required to identify the second supervisor within the graduate student's first term and to notify the LMP Graduate Program Office. The Graduate Coordinator or Department Chair must approve the choice.

- A second supervisor must be appointed for any faculty member supervising his or her first graduate student for the duration of that student's program.
- A second supervisor must also be appointed for any faculty member supervising his or her first PhD student for the duration of that student's program.
- The appointed second supervisor must have graduated a student from the University of Alberta.
- The role of second supervisor is to provide an additional source of guidance and support to the student while also acting as a mentor to the new supervisor.
- As per FGSR guidelines, supervisors must be active in the general subject area of the student's research; however, LMP suggests that the second supervisor's role is not necessarily to direct the research. In that regard, it should be noted that a second supervisor is not automatically a co-author on publications associated with the student. As for all publications, co-authorship should reflect a significant intellectual contribution to the manuscript.

For Supervisors whose Primary Appointment is not LMP

- For faculty members whose primary appointment is not LMP but who are tenured, tenure-track, a retired faculty member, or a Faculty Service Officer, of the University of Alberta, the same guidelines apply as for LMP faculty.
- For faculty members who are external to the University of Alberta, it is LMP policy that there be a second supervisor who is primarily appointed to Laboratory Medicine & Pathology for the duration of the graduate student's program.

3.2.3 Graduate Student Supervisor Responsibilities

The supervisor is directly responsible for the supervision of the graduate student's program. In this capacity, the supervisor assists the graduate student in planning a program, ensures that the graduate student is aware of all program requirements, degree regulations, and general regulations of the department and the Faculty of Graduate Studies and Research (FGSR), provides counsel on all aspects of the program, and stays informed about the student's research activities and progress.

The supervisor is also charged with ensuring that graduate students conduct their research in a manner that is as effective, safe, and productive as is possible.

The supervisor must prepare a program of studies for the graduate student, arrange for and attend all supervisory committee meetings and examinations, ensuring that these are scheduled and held in accordance with FGSR regulations, and must review the thesis both in draft and in final form.

Specifically, it is the responsibility of the graduate student supervisor to:

- evaluate the graduate student's previous academic experience, and recommend courses the graduate student should take to ensure a solid and appropriate academic background is in place for the research to be undertaken.

- provide an environment for the graduate student that is conducive to research, and in which the graduate student can grow intellectually:
 - graduate students need time to study for courses, prepare for candidacy exams, write papers and read the literature; and
 - graduate students should also be encouraged to participate in activities that enhance their academic experience such as attending seminars, meeting with seminar speakers, participating in the graduate student organizations, attending conferences, and developing their skills and experience in teaching and mentoring;
- consider a graduate student a junior colleague;
 - supervisors are reminded that graduate students are fellow academics and should be treated with respect;
 - graduate students should not be viewed as “a pair of hands” and supervised only on the technical aspects of their project;
- maintain open communication with the student concerning any problem; and in the event of a conflict in the supervisor-student relationship, discusses the issues with the student and graduate coordinator in a timely fashion
- ensure that appropriate financial support for the graduate student's stipend is in place, or that sources of funding are available for the graduate student to apply for where applicable. (See [Graduate Student Financial Support and Awards](#))
- ensure that there are sufficient financial and supervisory resources and materials for the research program of each graduate student being supervised.
- ensure that the graduate student is aware of his/her responsibilities (as listed previously) and, when necessary, assist the graduate student in meeting them.
- provide appropriate guidance to the student on the nature of research and the standard expected, and is accessible to give advice and constructive feedback; at the beginning of the supervisory relationship, the student should be made aware in writing of the expectations held by the supervisor and the department that are not already defined in the University Calendar and the FGSR Graduate Program Manual.
- establish, with the graduate student, a realistic timetable for completion of various phases of the program.
- establish, with input from the graduate student, a Supervisory Committee within one year of the graduate student starting the graduate program (LMP suggests addressing this within eight months of the start of program).
- ensure that the Supervisory Committee maintains contact and formally meets with the graduate student at least once a year.
- communicate to the Graduate Coordinator, student and Supervisory Committee members regarding all meetings, examinations and any information relating to the student's graduate program.
- set up Committee meetings and examinations in consultation with the student, and with the graduate student's full knowledge.
- complete all relevant forms, including signatures, and submit them to the Graduate Coordinator.

- if going on leave or absent for an extended period, advise the Graduate Coordinator which member of the Supervisory Committee will be the acting supervisor.

3.3 Graduate Student Supervisory Committee

It is recommended that the Supervisory Committees for both PhD and Master's students be established **within eight months** of the start of the student's program, but must be established within one year. The committee must have **at least three members** including the supervisor(s).

3.3.1 Qualification of Supervisory Committee Members

In the Department of Laboratory Medicine & Pathology, the Graduate Coordinator recommends the suitability of individual Faculty members to sit on Supervisory Committees.

At a minimum, supervisory committee members must be qualified to serve as Examining Committee members as they are *ex-officio* members of the examining committee.

Members of a supervisory committee are to be sufficiently competent and experienced to serve at the required level. In forming a supervisory committee, consideration is given to the rank and experience of the prospective members, their publications and other demonstrations of competence in the subject area or field of specialization, and the prospective members' experience in graduate supervision.

[\(FGSR Grad Program Manual Section 8.1.5\)](#)

Persons may not act as Supervisory Committee member for matters in which they have a conflict of interest. Any personal relationships that alter or affect this academic relationship may constitute a conflict of interest (e.g., familial or intimate relationship, business relationship). Compliance with the University of Alberta's [Conflict Policy – Conflict of Interest and Commitment, and Institutional Conflict](#) is mandatory.

3.3.2 Graduate Student Supervisory Committee Responsibilities

- Is accessible to the graduate student for consultation;
- Provides guidance and advice to the graduate student based on their area of expertise;
- Participates in regular committee meetings at least once a year;
- Recommends and approves courses for the graduate student;
- Approves the graduate student's PhD research proposal before submission;
- Signs a statement approving the suitability of a thesis for examination prior to submission of the final oral examination form; and
- Participates in candidacy and/or final oral examinations.

3.4 Graduate Studies Committee

The role of the Graduate Studies Committee is to:

- promote and enhance graduate studies;
- set policy as defined in the LMP *graduate program handbooks*;
- review and make decisions as necessary regarding admissions and student awards;
- assist in monitoring graduate student progress; and
- assist in the informal appeals or grievance processes.

The graduate program in Laboratory Medicine and Pathology is administered by the Graduate Studies Committee which normally consists of the Department Chair, the Graduate Coordinator, the Director of the Pathologists' Assistant program, at least 4 additional faculty members (where at least 50% must be actively supervising graduate students), and 1-2 graduate student representatives. The Graduate Program Advisor is a non-voting member. All faculty members of the Graduate Studies Committee are appointed by the Department Chair for a defined term of service.

At least 3 faculty members plus the Graduate Coordinator are required for quorum.

3.5 Graduate Coordinator

1. Acts as the official graduate program representative of the Department to the FGSR and the Faculty of Medicine & Dentistry (FoMD).
2. Communicates relevant information from the FGSR and FoMD to students and faculty members in the Department.
3. Communicates relevant information to the FGSR and FoMD regarding students in the Department.
4. Is accessible for consultation with students and faculty members in the Department.
5. Monitors student supervision and ensures that the supervisors meet regulations and requirements of the FGSR, FoMD, and the department.
6. Is responsible for admission of students to the department. Confirms that applications for graduate studies are complete, and that the applicants meet the admission criteria before recommendations for admission are forwarded to FGSR.
7. Ensures that a supervisor and a supervisory committee are set up within one year of the student starting the graduate program.
8. Ensures that the supervisor has arranged appropriate financial support for the student's stipend and research project where applicable.
9. Prior to sending the student's PhD proposal and the supervisor's summary of the potential contribution to science to the external reviewers, the Graduate Coordinator reviews the proposal package for completeness and may meet with the student.
10. The Graduate Coordinator submits the PhD Proposal package, reviewers' comments, and student responses to the Graduate Studies Committee for discussion at its next meeting.
11. If the PhD proposal is not submitted by the end of the second year of the PhD Program, the Graduate Coordinator ensures that a written explanation and timeline for submission is received from the supervisor (including interdisciplinary students whose home department is not Laboratory Medicine & Pathology).
12. Assists supervisors in addressing concerns regarding student progress.
13. Recommends to the FGSR that the supervisor and members of the supervisory committee:
 - have the appropriate background and experience to guide the student;
 - have the expertise, time and ability to adequately supervise the student;
 - demonstrate continuing scholarly or creative activity of an original nature.
14. Recommends the addition of a second supervisor as required.
15. Monitors the progress of all students in the Department.
16. Meets with students as needed.

17. Chairs the candidacy and final oral examinations or delegates the responsibility as necessary.
18. Acts as the course coordinator for LABMP 540 Directed Reading in Laboratory Medicine and Pathology.
19. Chairs meetings of the LMP Graduate Studies Committee.
20. Is an *ex officio* member of the LMP Awards Committee.
21. Is responsible for grade approval for graduate level LABMP courses.

Relationships between Graduate Coordinators and the staff and graduate students in their program(s) should be academic. Any personal relationships that alter or affect this academic relationship may constitute a conflict of interest (e.g., familial or intimate relationship, business relationship). Compliance with the University of Alberta's [Conflict Policy – Conflict of Interest and Commitment, and Institutional Conflict](#) is mandatory. Persons may not act as Graduate Coordinator for matters in which they have a conflict of interest.

3.6 Graduate Student Financial Support and Awards

It is the graduate student's responsibility to apply for appropriate external funding, and it is the supervisor's responsibility to facilitate those applications in a timely fashion.

See [LMP Awards and Funding](#) and [FGSR Awards and Funding](#) for awards information pertinent to LMP students.

Definitions for the purposes of student financial support:

Financial support or **funding level** = total amount of stipend, or award(s), or any combination of stipend and award(s)

Stipend = payment to student from an operating grant

Award = scholarship/fellowship or award; excludes travel awards (e.g from LMP, FGSR, or the GSA) and prizes (e.g. Andrew Stewart Prize).

Note: Per FGSR, scholarships, fellowships and awards are intended to support future work; prizes recognize past accomplishments and are not intended to support future work.

Major award = an award or scholarship of \$13,000 or greater (in agreement with FoMD guidelines)

GRAF Minimum Stipend: Graduate Research Assistantship Fellowship Minimum Stipend for Full Funding Support as defined in the [Graduate Student Assistantship Collective Agreement](#).

For the period of Sept 1, 2017 - Aug 31, 2018 the funding minimum is:

\$24,089.16/year (\$2007.43/month) for MSc students

\$25,197.24/year (\$2,099.77/month) for PhD students

While the department sets the funding policy, supervisors are responsible for the financial support of graduate students under their supervision according to the following:

- The supervisor must ensure that the student receives financial support in the form of a stipend, award(s), or combination of these which equals the GRAF Minimum Stipend. Specific guidelines follow.
- Expected duration of funding:
 - For master's students: 2.5 years minimum
 - For doctoral students: 5 years minimum

- Student funding beyond the expected duration is subject to satisfactory performance and availability of funding.
- Self-funding by students who are within the expected funding periods may not replace the required level of funding support.

Funding of students with no award(s):

Supervisor ensures student receives a stipend which at least equals the GRAF Minimum Stipend.

Funding of students earning major and minor awards:

Major awards only:

Major awards are administered according to the rules of the awarding agency. However, if the student earns a **major award of a value less than the GRAF Minimum Stipend**, the supervisor must ensure that the student receives a stipend (top-up) which ensures an annual funding level at least equal to the GRAF Minimum Stipend for the duration of the major award.

Minor awards only:

For each minor award earned:

- If (\$value of the award - \$1,500) is ≤ 0 , there is no change to the student's current stipend; student funding level increases by the value of the award for that year
- If (\$value of the award - \$1,500) is > 0 , then the supervisor may opt to adjust the student's stipend as follows:

$$\text{revised stipend} = \text{current stipend} - x (\$ \text{value of award} - \$1,500)$$

where x = percentage of reduction set by the supervisor

x = 50% is suggested so as to encourage students to apply for awards while also recognizing the needs of supervisors to fund laboratory activities in support of the student's research, but any percentage may be used

0% = no reduction

100% = reduction of all but \$1,500

$$\text{revised funding level for that year} = \text{revised stipend} + \text{value of award}$$

- In all cases, the student's overall funding level increases.

Major and minor awards:

- If a student holding a major award subsequently earns a minor award, the student (1) keeps the entire value of the minor award(s) if permitted by both awarding agencies, and (2) there is no reduction to the stipend.
- If the student holding a minor award subsequently earns a major award, the student may keep the entire value of the minor award if permitted by both awarding agencies. If the student cannot keep the minor award due to awarding agency guidelines, then the "major awards only" guideline is followed.

For a student holding major and/or minor awards, **funding level may decrease the following year** if additional awards are not earned.

On the rare occasion that a supervisor has to let a graduate student go because of financial exigency, they are not permitted to take on a new graduate student for at least one calendar year. Supervisors must make students aware of their financial situation and their ability to support the graduate student during their graduate career.

3.7 Complaints and Conflicts

3.7.1 Coursework Complaints

Concerns regarding coursework or grades should be addressed first with the course instructor and, if that proves unsatisfactory, then with the chair of the department where the course is taught, and finally with the dean of the faculty in which the course is taught or that dean's designate (usually the associate dean).

For detailed guidelines of the informal and formal grade appeals process see the Faculty of Medicine and Dentistry's Policy and Procedure on [Academic Appeals](#). Specific timelines apply.

Grades cannot be appealed beyond the Faculty level.

The [Office of the Student Ombuds](#) may be consulted for advice at any time.

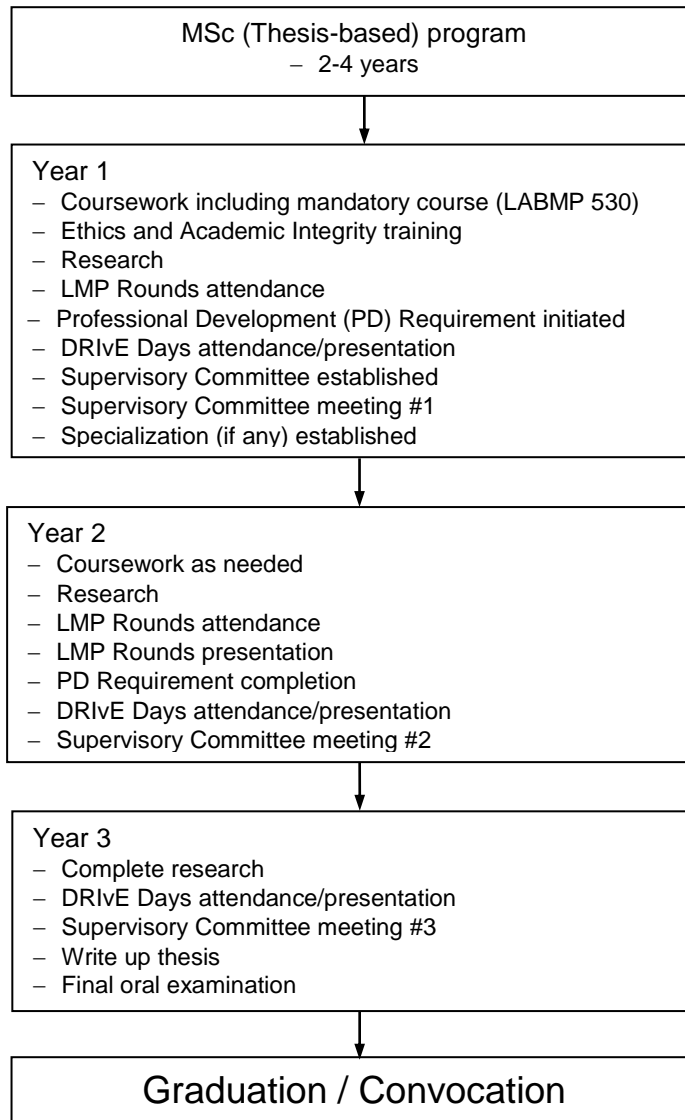
3.7.2 Student/Supervisor Conflicts

The relationship between students and supervisors is normally close and long-lasting. At times, conflicts may arise between a student and the supervisor.

- The first step is to try to resolve the conflict or misunderstanding informally. The supervisor and student should discuss the problem together.
- If resolution is unsuccessful, the graduate coordinator should be notified as early as possible. It is the responsibility of the graduate coordinator to arrange for consultation and mediation.
- Assistance/advice of the supervisory committee or other appropriate resources may be requested.
- Finally, assistance of the FGSR may be requested.
- The [Office of the Student Ombuds](#) may be consulted for advice at any time.

([FGSR Grad Program Manual Section 8.1.6](#))

4 MASTER'S PROGRAM



4.1 Time Limits for Program Requirements and Completion (MSc)

Laboratory Medicine & Pathology requires that thesis-based master's students complete all program requirements *other than the thesis* within two years of the commencement of their program.

The time limit for program completion as established by FGSR is four years from their start date. The minimum length of time is determined by registration requirements: students must pay the equivalent of at least one full year of program fees. Notwithstanding this, students are required to fulfill the department's program requirements; a minimum of two years is a realistic expectation for Master's students in LMP.

Any time spent as a qualifying graduate student is not counted in the time limit for completion.

[\(FGSR Grad Program Manual Section 6.2](#) and [Section 7.9\)](#)

4.2 Registration Requirement

All students in Laboratory Medicine & Pathology graduate programs must be full time. It is also FGSR policy that Students who are admitted to any thesis-based degree program and who initially register as full-time students in these programs must register full-time for the remainder of their program.

To be considered full time, master's students:

- must register in 9 units of course weight (UCW) each Fall and Winter term of their programs; these 9 UCW may consist of a combination of courses and thesis research.
- must register in Thesis 906 for each of the Spring and Summer terms

If proof of registration is required, [registration verification](#) can be obtained from the Registrar's Office.

4.3 General degree and Specialization

All master's students are initially admitted to the general program. The degree certificate/parchment for the general program will read: Master of Science in Laboratory Medicine and Pathology.

In consultation with their supervisor/supervisory committee, student may choose to specialize in one of the following three areas by successfully completing the course(s) associated with their chosen specialization (see [Required Coursework \(MSc\)](#)).

- Analytical & Environmental Toxicology
- Biopreservation
- Molecular Pathology

Specialization should be established within the first year of the student's program after completion of at least one of the associated courses. Students must advise the LMP Graduate Program of their decision to specialize; FGSR will be advised by the program office via email.

The degree certificate/parchment for the specialized programs will read:

Master of Science in Laboratory Medicine and Pathology – Analytical and Environmental Toxicology

Master of Science in Laboratory Medicine and Pathology – Biopreservation

Master of Science in Laboratory Medicine and Pathology – Molecular Pathology

4.4 Required Coursework (MSc)

LABMP 530 is mandatory for all students.

Students who choose to specialize must also successfully complete the course(s) associated with their chosen specialization:

Specialization	Associated Courses
Analytical & Environmental Toxicology	<i>must take</i> LABMP 550 <i>recommended to take</i> LABMP 551 also
Biopreservation	<i>must take</i> LABMP 510 <i>recommended to take</i> LABMP 511 also
Molecular Pathology	<i>must take either</i> LABMP 500 or LABMP 581 <i>recommended to take both</i> LABMP 500 and LABMP 581

The minimum required coursework MSc students in Laboratory Medicine & Pathology is 9 units of course weight (UCW) of graded, graduate-level courses, or approved equivalent; this is typically three 3 courses.

The supervisor and the Supervisory Committee will establish the required courses that a graduate student must complete during their program. Graduate students may be required to take more than the minimum number of courses in order to address deficiencies in their prior training, or to provide background training that is essential for the completion of their degree programs.

Any University of Alberta graduate level graded course may be taken if it has been approved by the student's supervisor/supervisory committee.

4.4.1 Academic Standing and Grades

- LMP graduate students must maintain a cumulative program GPA of 3.0
- The passing grade for graduate courses is C+ (2.3)
- If the cumulative grade point average falls between 2.3 and 3.0, termination of program or continuation in the program for a specified probationary period may be recommended.
- Notwithstanding the above, a graduate student whose academic standing falls below a grade point average of 3.0 may be required to withdraw at any time.

4.5 Research and Thesis (MSc)

An experiment based research project is required and is the major component of the student's program. All candidates must present a thesis embodying the results of their research and the topic must be approved by the candidate's supervisor and Supervisory Committee.

- A master's thesis, at a minimum, should reveal that the candidate is able to work in a scholarly manner and is acquainted with the printed works published on the subject of the thesis. As far as possible, it should be an original contribution. ([FGSR Grad Program Manual Section 8.4.1](#))

For further information on Thesis Preparation please see LMP's [Guidelines for the Thesis and Final Examination](#) and FGSR's [Thesis Requirement & Preparation](#).

4.5.1 Research Laboratory Safety

The University of Alberta undertakes regular safety audits and, in consideration of this, the department of Laboratory Medicine and Pathology asks that the graduate program track graduate student safety training, demonstrating due diligence in this important area. At a minimum, all students must complete three online laboratory safety training courses offered U Alberta's [Environment, Health & Safety: WHMIS, Laboratory Safety, and Concepts in Biosafety](#). In addition to these, lab specific training must be completed prior to performing any laboratory work. Students must complete the training and submit the [Graduate Student Safety Training](#) form to the LMP Graduate Program Office preferably within one month of beginning their programs but no later the end of the first term.

4.6 Ethics and Academic Integrity Training Requirement

Ethics and Academic Integrity Training is mandatory for all newly-admitted University of Alberta graduate students. Eight hours of training is required.

The Department of Laboratory Medicine & Pathology (LMP) Graduate Studies Committee has determined that the Ethics and Scientific Integrity (ESI) Day offered by the Faculty of Medicine and

Dentistry is a mandatory component of this training for LMP students. The ESI Day supplies 5 hours training. The remaining three hours of training may be obtained by completing any one of the following:

1. [Graduate Ethics Training \(GET\)](#) via eClass
2. LABMP 530* or LABMP 535
3. Another graduate level university ethics course or course with ethics components (PHS 543, PHIL 550, MED 650, INT D 670, INT D 570 or others as approved by the LMP Graduate Studies Committee)
4. Submission of a completed ethics review application to an established Human or Animals Research Ethics board.
5. HSLAS (Health Sciences Laboratory Animal Services) training course
6. [Tri-Council ethics tutorial](#)

It is the responsibility of the graduate student to register for these sessions and to submit documentation of completion of these sessions to the Graduate Coordinator.

* Because LABMP 530 is mandatory, current MSc and PhD students meet the FGSR Ethics and Academic Integrity Training requirement by completing ESI Day and LABMP 530.

4.7 Presentation/Seminar Attendance Requirement (MSc)

1. Master's students are required to make one oral presentation to the department at LMP Rounds. Student LMP Rounds presentations are scheduled for 25 minutes, generally a 20 minute presentation followed by a short question period. Students are expected to present their own research data.
2. It is expected that graduate students attend LMP Rounds in order to obtain a broad perspective on a wide range of topics in laboratory medicine and pathology. Attendance at 60% of Rounds presentations each year for the first two years of the master's program is required to ensure continuation in the student's program. To record attendance, students are responsible for signing the log book that will be found in the seminar room. Failure to sign the logbook will not be accepted as a reason for failing to meet the attendance requirement.

4.8 Professional Development Requirement

As of Fall 2016, all incoming graduate students must complete a professional development requirement, which includes the *Individual Development Plan (IDP)* and a minimum of 8 hours of professional development activities. The professional development requirement is not mandatory for graduate students who began their programs prior to Fall 2016, but all are encouraged to do so.

There is a recognized need for graduate students and their supervisors to be more aware of professional development, and the diversity of skills to be developed during graduate programs that go far beyond the ability to complete academic and research requirements. During completion of the IDP, students are expected to identify 3 possible career paths, and map appropriate professional development activities to support development of skills to enhance employment opportunities after graduation. Accordingly, students are expected to:

1. Begin developing the IDP by the start of the second term of the first year. FGSR's [Individual Development Plan \(IDP\)](#) webpage provides guidance.

2. Identify a career mentor before the end of the second term of the first year.

The career mentor does not have to be the supervisor, but must have an official academic position. *Plan to meet with the career advisor periodically – at least annually* – to discuss the IDP and appropriate professional development activities.

3. Submit IDP and plan for a minimum of 8 hours* of professional development activities to the LMP Graduate Program office by the end of year 1.

See FGSR's [Eight Hours of Professional Development Activities](#) for guidance.

4. Provide evidence of completion of the professional development requirement to the LMP Graduate Program office by the end of year 2 for MSc students.

The student must meet with the career mentor to review the evidence of completion of the professional development requirement; if met, the career mentor will sign the [Individual Development Plan & Professional Development Completion](#) form. The student will then submit this documentation to the Graduate Coordinator for review and signature. The form is then retained in the student's file as evidence for the *Completion of Thesis & Program Requirements* form.

4.9 Supervisory Committee Meetings (MSc)

- It is ultimately the responsibility of the supervisor to ensure that the graduate student has annual supervisory committee meetings.
- Annual meetings are considered to be minimal and, if possible, more frequent meetings are encouraged.
- See [Supervisory Committee Meetings](#) for guidelines.
-

4.10 Final Examination

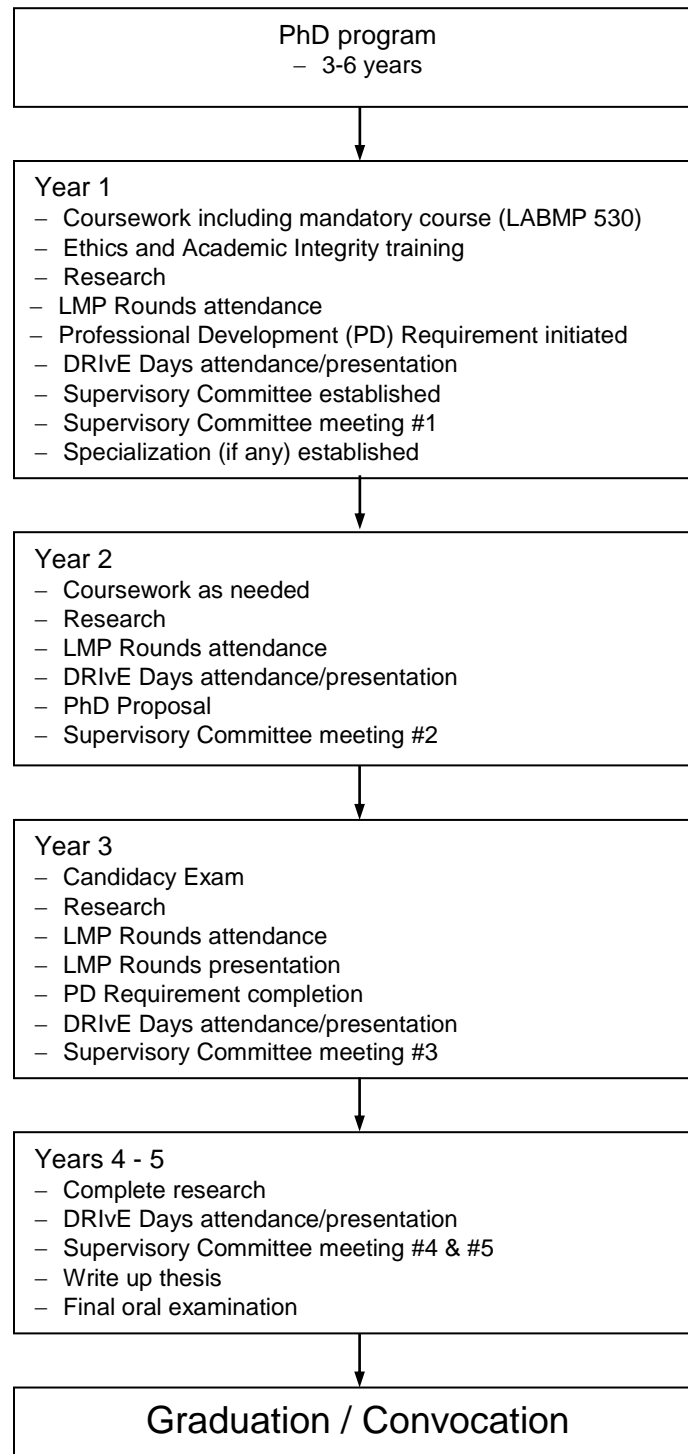
After the completion of all program requirements, including an acceptable draft of the thesis, the final examination can be planned. See [Final Examinations and Program Completion](#) for guidelines.

4.11 MSc Program Monitoring

4.11.1 Timelines

SUPERVISOR	
<i>Event / Forms</i>	<i>Department Timeline</i>
Nominate supervisor: Appointment of Supervisor(s) and Supervisory Committee	<ul style="list-style-type: none"> Supervisor identified prior to offer of admission Submit form after student has registered
SUPERVISORY COMMITTEE	
<i>Event / Forms</i>	<i>Department Timeline</i>
Nominates Supervisory Committee members: Appointment of Supervisor(s) and Supervisory Committee or memo	<ul style="list-style-type: none"> Within the first 8 months and no later than the end of the first year
Supervisory Committee meets with student to review program and progress; submits Graduate Student Supervisory Committee Meeting Report	<ul style="list-style-type: none"> Annually, or more often as deemed appropriate by the supervisor
SPECIALIZATION	
<i>Event / Forms</i>	<i>Department Timeline</i>
Choose specialization, if any. FGSR advised via email from the LMP Grad Program Office.	<ul style="list-style-type: none"> Within the first year of the program, and after completion of at least one of the associated courses.
PROGRAM REQUIREMENTS	
<i>Event / Forms</i>	<i>Department Timeline</i>
Course work (9 UCW)	<ul style="list-style-type: none"> Within first two years of program <ul style="list-style-type: none"> IDP due within 12 months of program start
Ethics training	
Professional Development requirement <ul style="list-style-type: none"> IDP and 8 hours of professional development activities 	
Rounds presentation	
Rounds attendance (≥60% in each of year 1 and 2)	
FINAL ORAL EXAMINATION	
<i>Event / Forms</i>	<i>Department Timeline</i>
Supervisory committee signs and submits the Departmental Acceptance of Thesis	<ul style="list-style-type: none"> Prior to setting examination date and before the thesis is sent to the examiners
Recommends Examining Committee and exam date: Notice of Examining Committee & Examination Date	<ul style="list-style-type: none"> Submit at least four weeks prior to examination Copy of the Notice is sent to examiners and student
Thesis is submitted to the Examining Committee and Chair	<ul style="list-style-type: none"> At least four weeks prior to examination
If required: Request to Restrict Access to a Thesis	<ul style="list-style-type: none"> Request must be made prior to or at the same time as submission of the <i>Thesis Approval / Program Completion</i> form to FGSR, for a period of up to two years
Report examining committee's decision on Thesis Approval / Program Completion form	<ul style="list-style-type: none"> Submit immediately after all signatures are obtained and within six months of the exam
Submit an electronic copy of the thesis to FGSR	<ul style="list-style-type: none"> Within six months of examination

5 Doctoral Program



5.1 Time Limits for Program Requirements and Completion (PhD)

Doctoral students are required to complete all program requirements *other than the thesis* within three years of the commencement of their program.

The time limit for program completion as established by FGSR is six years from their start date. The minimum length of time is determined by registration requirements: students admitted before Fall 2011 must complete 36 units of course weight; students admitted Fall 2011 or later must pay the equivalent of at least three full year of program fees. Notwithstanding this, students are required to fulfill the department's thesis-based program requirements and a realistic expectation for doctoral students to complete their program in LMP is a minimum of four to six years.

Note: Master's students who are reclassified as doctoral program must complete all degree requirements within six (6) years from their first term of registration as a Master's student.

Any time spent as a qualifying graduate student is not counted in the time limit for completion.

([FGSR Grad Program Manual Section 6.2](#) and [Section 7.9](#))

5.2 Registration Requirement

All students in Laboratory Medicine & Pathology graduate programs must be full time. It is also FGSR policy that Students who are admitted to any thesis-based degree program and who initially register as full-time students in these programs must register full-time for the remainder of their program.

To be considered full time, the following requirements must be met:

Doctoral students admitted before Fall 2011:

- must register in 9 units of course weight (UCW) each Fall and Winter term of their programs and by doing so will be considered full time through the Spring and Summer terms; these 9 UCW may consist of a combination of courses and thesis research.
- are eligible to register in Thesis 919 (reduced-fee thesis) after two full years (four terms)

Doctoral students admitted Fall 2011 or later:

- must register in 9 units of course weight (UCW) each Fall and Winter term of their programs; these 9 UCW may consist of a combination of courses and thesis research.
- must register in Thesis 906 for each of the Spring and Summer terms

If proof of registration is required, [registration verification](#) can be obtained from the Registrar's Office.

5.3 General degree and Specialization

All doctoral students are initially admitted to the general program. The degree certificate/parchment for the general program will read: Doctor of Philosophy in Laboratory Medicine and Pathology.

In consultation with their supervisor/supervisory committee, student may choose to specialize in one of the following three areas by successfully completing the course(s) associated with their chosen specialization (see [Required Coursework \(PhD\)](#)).

- Analytical & Environmental Toxicology
- Biopreservation
- Molecular Pathology

Specialization should be established within the first year of the student's program after completion of at least one of the associated courses. Students must advise the LMP Graduate Program of their decision to specialize; FGSR will be advised by the program office via email..

The degree certificate/parchment for the specialized programs will read:

Doctor of Philosophy in Laboratory Medicine and Pathology – Analytical and Environmental Toxicology

Doctor of Philosophy in Laboratory Medicine and Pathology – Biopreservation

Doctor of Philosophy in Laboratory Medicine and Pathology – Molecular Pathology

5.4 Required Coursework (PhD)

LABMP 530 is mandatory for all students.

Students who choose to specialize must also successfully complete the course(s) associated with their chosen specialization:

Specialization	Associated Courses
Analytical & Environmental Toxicology	<i>must take</i> LABMP 550 <i>recommended to take</i> LABMP 551 also
Biopreservation	<i>must take</i> LABMP 510 <i>recommended to take</i> LABMP 511 also
Molecular Pathology	<i>must take</i> either LABMP 500 or LABMP 581 <i>recommended to take</i> both LABMP 500 and LABMP 581

The minimum required coursework for PhD students in Laboratory Medicine & Pathology is:

- at least 12 *graded* units of course weight (UCW) at the graduate level (typically 4 courses) for students who do not have a Master's degree, or
- at least 6 *graded* UCW at the graduate level (typically 2 courses) for students who do have a Master's degree.

The supervisor and the Supervisory Committee will establish the required courses that a graduate student must complete during their program. Graduate students may be required to take more than the minimum number of courses in order to address deficiencies in their prior training, or to provide background training that is essential for the completion of their degree programs.

Any University of Alberta graduate level graded course may be taken if it has been approved by the student's supervisor/supervisory committee.

5.4.1 Academic Standing and Grades

- LMP graduate students must maintain a cumulative program GPA of 3.0
- The passing grade for graduate courses is C+ (2.3)
- If the cumulative grade point average falls between 2.3 and 3.0, termination of program or continuation in the program for a specified probationary period may be recommended.
- Notwithstanding the above, a graduate student whose academic standing falls below a grade point average of 3.0 may be required to withdraw at any time.

5.5 Research and Thesis (PhD)

An experiment based research project is required and is the major component of the student's program. All candidates must present a thesis embodying the results of their research and the topic must be approved by the candidate's supervisor and Supervisory Committee.

- A Doctoral Thesis must embody the results of original investigations and analyses and be of such quality as to merit publication; furthermore, it must constitute a substantial contribution to the knowledge of the candidate's field of study.

For further information on Thesis Preparation please see LMP's [Guidelines for the Thesis and Final Examination](#) and FGSR's [Thesis Requirement & Preparation](#).

5.5.1 Research Laboratory Safety

The University of Alberta undertakes regular safety audits and, in consideration of this, the department of Laboratory Medicine and Pathology asks that the graduate program track graduate student safety training, demonstrating due diligence in this important area. At a minimum, all students must complete three online laboratory safety training courses offered U Alberta's [Environment, Health & Safety: WHMIS, Laboratory Safety, and Concepts in Biosafety](#). In addition to these, lab specific training must be completed prior to performing any laboratory work. Students must complete the training and submit the [Graduate Student Safety Training](#) form to the LMP Graduate Program Office preferably within one month of beginning their programs but no later the end of the first term.

5.6 Ethics and Academic Integrity Training Requirement

Ethics and Academic Integrity Training is mandatory for all newly-admitted University of Alberta graduate students. Eight hours of training is required.

The Department of Laboratory Medicine & Pathology (LMP) Graduate Studies Committee has determined that the Ethics and Scientific Integrity (ESI) Day offered by the Faculty of Medicine and Dentistry is a mandatory component of this training for LMP students. The ESI Day supplies 5 hours training. The remaining three hours of training may be obtained by completing any one of the following:

1. [Graduate Ethics Training \(GET\)](#) via eClass
2. LABMP 530* or LABMP 535
3. Another graduate level university ethics course or course with ethics components (PHS 543, PHIL 550, MED 650, INT D 670, INT D 570 or others as approved by the LMP Graduate Studies Committee)
4. Submission of a completed ethics review application to an established Human or Animals Research Ethics board.
5. HSLAS (Health Sciences Laboratory Animal Services) training course
6. [Tri-Council ethics tutorial](#)

It is the responsibility of the graduate student to register for these sessions and to submit documentation of completion of these sessions to the Graduate Coordinator.

* Because LABMP 530 is mandatory, current MSc and PhD students meet the FGSR Ethics and Academic Integrity Training requirement by completing ESI Day and LABMP 530.

5.7 Presentation/Seminar Attendance Requirement (PhD)

1. PhD students, in addition to the public presentation which is part of their final exam, must make one

oral presentation to the department at LMP Rounds. Student LMP Rounds presentations are scheduled for 25 minutes, generally a 20 minute presentation followed by a short question period. Students are expected to present their own research data.

2. It is expected that graduate students attend LMP Rounds in order to obtain a broad perspective on a wide range of topics in laboratory medicine and pathology. Attendance at 60% of Rounds presentations each year for the first three years of the doctoral program is required to ensure continuation in the student's program. To record their attendance, students are responsible for signing the log book that will be found in the seminar room. Failure to sign the logbook will not be accepted as a reason for failing to meet the attendance requirement.

5.8 Professional Development Requirement

As of Fall 2016, all incoming graduate students must complete a professional development requirement, which includes the *Individual Development Plan (IDP)* and a minimum of 8 hours of professional development activities. The professional development requirement is not mandatory for graduate students who began their programs prior to Fall 2016, but all are encouraged to do so.

There is a recognized need for graduate students and their supervisors to be more aware of professional development, and the diversity of skills to be developed during graduate programs that go far beyond the ability to complete academic and research requirements. During completion of the IDP, students are expected to identify 3 possible career paths, and map appropriate professional development activities to support development of skills to enhance employment opportunities after graduation. Accordingly, students are expected to:

5. Begin developing the IDP by the start of the second term of the first year. FGSR's [Individual Development Plan \(IDP\)](#) webpage provides guidance.

6. Identify a career mentor before the end of the second term of the first year.

The career mentor does not have to be the supervisor, but must have an official academic position. *Plan to meet with the career advisor periodically – at least annually* – to discuss the IDP and appropriate professional development activities.

7. Submit IDP and plan for a minimum of 8 hours* of professional development activities to the LMP Graduate Program office within 18 months of program commencement.

See FGSR's [Eight Hours of Professional Development Activities](#) for guidance.

8. Provide evidence of completion of the professional development requirement to the LMP Graduate Program office by the end of year 3 for PhD students.

The student must meet with the career mentor to review the evidence of completion of the professional development requirement; if met, the career mentor will sign the [Individual Development Plan & Professional Development Completion](#) form. The student will then submit this documentation to the Graduate Coordinator for review and signature. The form is then retained in the student's file as evidence for the *Completion of Thesis & Program Requirements* form.

5.9 Supervisory Committee Meetings (PhD)

- It is ultimately the responsibility of the supervisor to ensure that the graduate student has annual supervisory committee meetings.
- Annual meetings are considered to be minimal and, if possible, more frequent meetings are

encouraged.

- If the annual supervisory committee meeting would normally occur within the 3 month period before or the 3 month period following the candidacy examination, the examination may serve in lieu of the committee meeting; however, a supervisory committee meeting report and supporting documentation must still be submitted. This may require a brief meeting immediately following the examination to discuss any points not addressed during the examination. The report and documentation are to be submitted with 7 days of the candidacy examination.
- See [Supervisory Committee Meetings](#) for guidelines.
-

5.10 PhD Proposal

Laboratory Medicine & Pathology strives for excellence in graduate studies, where graduate students are highly motivated to make original contributions in science and to complete their PhD program with peer-reviewed publications. The department utilizes the expertise of external reviewers to review all proposals from PhD students registered in our program.

5.10.1 PhD Proposal Requirements

PhD students must submit a PhD Proposal package following the completion of the majority of their course work and within the first 2 years of the start of their program. If the proposal is not submitted within this timeframe, a written explanation and timeline for submission should be forwarded to the Graduate Coordinator from the supervisor. (This includes interdisciplinary students whose home department is not Laboratory Medicine & Pathology).

5.10.2 PhD Proposal

The proposal will contain:

- a review of the pertinent literature,
- the research hypothesis,
- the specific objectives of the research,
- a review of the relevant work done previously by the student or the research group on the subject,
- a detailed presentation of the planned experimental approach, and
- the significance of the anticipated results.

The planned experimental approach will present the actual work proposed by the student and will not contain work or anticipated work that will not be conducted by the student.

The thesis proposal is to be written by the student. The thesis proposal must be entirely the student's own creation, although she/he can utilize the supervisor's guidance and/or the expertise in the department or on campus to explore ideas and obtain specific background or technical information.

5.10.3 The PhD Proposal Package

The applicant's proposal package consists of the following:

1. The [proposal form](#) which includes:
 - Project title
 - Student's completed and proposed coursework
 - Ethics training
 - Student honours and awards

- Student presentations
 - Student publications
 - Timeline of the PhD program, indicating supervisory committee meetings, proposed month of the candidacy examination and final oral examination
 - Student's signature
 - The signatures of the student's supervisor and the supervisory committee to indicate approval of the proposal package.
2. A written statement from the supervisor (maximum of 200 words) outlining the potential contribution to science of the student's PhD project.
 3. A written statement from the supervisor on the expertise of the supervisory committee members (one or two sentences per committee member), as well as the resources (facilities, equipment, personnel) available to support the student's program relevant to the PhD proposal.
 4. A proposal outlining the scope of the research project:
 - **A written proposal.** This must be completed independently by the student and should clearly and precisely outline his/her role in the research.
 - Length: Must not exceed four (4) pages, excluding appendices.
 - Format: single spaced with 1.0 inch (2.5 cm) margins.
 - Font: Times New Roman, size 12.
 - **Appendices.** These are limited to 10 pages with not more than 2 figures per page, and should be restricted to figures, legends, references, questionnaires and tables.

Please Note: Anything exceeding these guidelines will be returned to the student and not be included for review.
 5. Proposals must be accompanied by a list of **five potential reviewers** outside our department (include name, department/institution, contact information). This information is to be supplied directly to the graduate coordinator from the student's supervisor via email or delivered by the student in a sealed and signed envelope.

An original paper copy of the proposal package is submitted to the LMP Graduate Program Office.

Submissions are accepted at any time.

5.10.4 Assessment of the PhD Proposal Package

The Graduate Coordinator reviews the PhD proposal package and may request a meeting with the student. The signature of the Graduate Coordinator on the PhD Proposal form indicates the PhD proposal package is complete and the PhD proposal may be sent for external review.

At least two independent experts review the graduate student's PhD proposal. They are asked to respond within two weeks to the following two questions and provide comments to support their responses:

Does the proposal encompass sufficient scope for a PhD degree?

Is there the potential for original contribution to science?

If any reviewer provides a negative response to either question, the reviews and a letter of guidance from the Graduate Coordinator will be provided to the student.

- The student submits a revised proposal along with a letter that explains how concerns were addressed for each reviewer. The same reviewer(s) is then asked to reconsider the proposal. A

different reviewer is used only if the original reviewer is unavailable or unwilling to participate further.

If there are subsequent negative responses, the reviews are provided to the student with a letter from the Graduate Coordinator advising that the student must meet with his or her supervisory committee to determine how best to proceed.

If all reviewers answer both questions positively, the student will be provided the reviewers' comments and asked to respond in writing to the Graduate Coordinator before the proposal is sent for consideration to the GSC. The Graduate Coordinator submits the PhD Proposal package, reviewers' comments, and student responses to faculty members of the Graduate Studies Committee for review and discussion at its next meeting. The GSC may provide recommendations to promote the student's success in his/her graduate program.

- The external reviews will be sent to the student and all members of the supervisory committee with a letter from the Graduate Coordinator indicating the **PhD Proposal is approved** and the student may proceed to planning the candidacy examination. Specific recommendations from the GSC would be included in this letter.

5.11 Candidacy Examination

Supervisors are expected to provide a *minimum of two to three weeks protected time* (away from lab work) prior to the candidacy examination date for students to make final preparations for this important examination. This is meant as a final preparation time only, as it is expected that students are studying well in advance of this period.

Students are encouraged to review the posted candidacy exam [tips & strategies](#) when preparing for their exam.

Only in certain circumstances may the candidacy examination may serve in lieu of a scheduled supervisory committee meeting. See [Supervisory Committee Meetings \(PhD\)](#).

5.11.1 Purpose of Candidacy Examination

The candidacy examination is comprehensive and addresses the qualifications of the doctoral graduate student in terms of his/her ability to pursue and complete original research at an advanced level. The purpose of the exam is to assess the breadth of the candidate's knowledge in her/his general field of research, the candidate's knowledge of the technical aspects of the proposed thesis research and the candidate's reasoning and critical thinking abilities.

5.11.2 Timelines

Graduate students are eligible to take the candidacy examination after the LMP Graduate Studies Committee (GSC) approves their [PhD Proposal](#).

Graduate students must complete the candidacy examination within 6 months of their PhD proposals being approved by the GSC. If the examination does not occur within this timeframe, a written explanation and timeline for submission should be forwarded to the Graduate Coordinator. Normally, the candidacy examination will occur within the first 30 months of the student's graduate program. Pursuant to FGSR policy, students must pass the candidacy examination 6 months before their final examination.

Once the schedule for the examination is agreed upon by the supervisory committee, the following steps will need to be taken:

- a. The supervisor notifies the LMP Graduate Program office of the composition of the candidacy examining committee, the exam chair, the date, time and location. The LMP

Graduate Program office will generate and obtain signatures on the [Notice of Examining Committee & Examination Date](#) **at least 4 weeks** prior to the proposed examination date and submit the completed form to FGSR.

- b. A copy of [Instructions To Candidacy Examining Committee](#) will be provided to all members of the Candidacy Examining Committee;
- c. The Candidacy Exam document must be submitted to the Candidacy Examining Committee **at least 2 weeks** before the scheduled examination to allow for circulation to all committee members, including the examiner(s) external to the department; and
- d. One week prior to the candidacy examination, it is the graduate student's responsibility to meet with the Examination Chair to review the logistics of the examination.

The Chair of the Examining Committee will submit the completed [Report of Completion of Candidacy Examination](#) form and his/her minutes of the examination to the Graduate Program Office within 7 days of the completion of the Candidacy Examination.

Minutes from successful examinations will be sent to the student and supervisor(s).

5.11.3 Composition and Roles of the Candidacy Examining Committee

The Graduate Coordinator will consider the recommendation of the student's Supervisory Committee when appointing the arm's length examiners.

The Candidacy Examining Committee will consist of a minimum of five faculty members meeting the following requirements.

- The Supervisory Committee and normally the addition of two other faculty members
- There must be a minimum of two arm's length members. An arm's length examiner must not be (or have been) a member of the supervisory committee, or have been connected with the thesis research in a significant way. The examiner should not have been associated with the student, outside of usual contact in courses or other non-thesis activities within the University, nor be related to the student or supervisor(s). Except in special circumstances (fully justified in writing to the Associate Dean, Research–Graduate Programs, FoMD), an arm's length examiner should not be a close collaborator of the supervisor(s) within the last six years. Arm's length examiners who have served on a student's Candidacy Examining Committee do not lose their arm's length status as a result, and are eligible to serve as arm's length examiners on the student's doctoral final examination if the other conditions of being arm's length remain unchanged.
- **At least half** of the examiners on every examining committee must hold a degree which is equivalent to or higher than the degree being examined. (FRCP is considered the equivalent of a master's degree.)
- **At least half** of the examiners on every examining committee must meet the employment requirement: current or retired tenured or tenure-track Faculty, current or retired Faculty Service Officer, or current Special Continuing ([Academic Staff Categories A1.1, A1.3, C1.1](#)). Examiners with clinical appointments are permitted, but do not satisfy this employment requirement.
- Roles may be combined.
- The exam is chaired by the LMP Graduate Coordinator or designate. A designate must be a faculty member in the Department of Laboratory Medicine & Pathology who is not the student's supervisor.

Examiners are full voting members of the examining committee. The Dean of FGSR, the Dean of FoMD, or Pro-Dean (the Dean's designate) may attend and participate fully in the examination. With the possible exception of the Pro Deans, *all examiners must be either active in the general subject area of the student's research, or bring relevant expertise to the assessment of the thesis.*

The Chair of the Department of Laboratory Medicine & Pathology, if not already a member of the Candidacy Examining Committee, may participate in the exam as a non-voting member.

The Examination Chair's role is to moderate discussion and direct questions, keep minutes of the examination, ensure that a fair examination occurs, ensure that departmental and FGSR regulations relating to the final examination are followed, and file the necessary report concerning the outcome of the examination. If the chair is not a member of the examining committee (FGSR encourages this arrangement), the chair does not vote.

All members must attend the examination.

5.11.4 Candidacy Examination Document

The candidacy examination document is the approved [PhD proposal](#) which may be expanded to address comments from the external reviewers of the proposal and the GSC.

5.11.5 Format of Examination

The candidacy examination will normally last 2 to 4 hours, after which the voting members of the Candidacy Examining Committee will make a decision. Students will be given 20 minutes at the start of the examination to give an oral presentation that summarizes the thesis proposal. The oral presentation will be followed by questions from the Candidacy Examining Committee. See the recommended [Candidacy Examination Protocol](#) for details. Each member of the Candidacy Examining Committee should assess the student's performance using the evaluation criteria in the following section.

5.11.6 Evaluation Criteria

FGSR stipulates that the graduate students must demonstrate "an adequate knowledge of the discipline and of the subject matter relevant to the thesis" and "the ability to pursue and complete original research at an advanced level." Members of the Candidacy Examining Committee will evaluate the graduate student against the following four general criteria:

- a. The graduate student has demonstrated effective written and verbal communication skills;
For example,
 - The graduate student answered questions with confidence and authority;
- b. The graduate student demonstrated an adequate knowledge of the scientific and technical concepts and principles in areas relevant to the proposed thesis;
- c. The graduate student demonstrated the critical thinking skills required to conduct original research;
For example,
 - The graduate student demonstrated understanding of how experimental design can be used to test hypotheses;
 - The graduate student demonstrated good problem-solving/reasoning skills;
- d. The graduate student demonstrated an understanding of the significance and relevance of their proposed research.

5.11.7 Candidacy Examination Protocol

The Department recommends the Examining Committee use the following protocol for the Candidacy Exam:

1. At the beginning of the exam, the Chair introduces the graduate student and the Candidacy Examining Committee members.

2. The candidate will then be asked to leave the room and the committee will review his/her undergraduate background and graduate coursework. The supervisor needs to supply all copies of all transcripts to all committee members to allow the committee to review the graduate student's academic record.

Note: There is no substantial input from the supervisor at this time, although the graduate student and supervisor will need to supply a 1-2 page CV for the student. The discussion of the graduate student's research and progress to date will occur at the conclusion of the exam.

3. The Candidacy Examining Committee discusses and agrees upon how the exam will be run, specifying the sequence of the events including:
 - a. The number of rounds of questioning (normally two),
 - b. The order of questioning: Normally,
 - i. the arm's length members;
 - ii. The Supervisory Committee members; and
 - iii. The graduate student's supervisor.
 - c. The length of time of each examiner has for each questioning in each round (normally 15-20 minutes).
4. The graduate student is then asked to rejoin the committee, the exam format decided on in Step 3 is explained to the student, and the examination begins. The graduate student delivers his/her 20 minute presentation.
5. The agreed upon number of rounds of questioning (step 3) follows, after which the student is asked to leave the room.
6. The Chair poses two rounds of questions to the Examining Committee, the first being their opinion on the performance of the student during the examination and the quality of the written material (as per [FGSR's evaluation criteria](#)), and the second their recommendation for the outcome.
7. A general discussion ensues with the Chair recording observations that would be of help to the student.
8. A formal vote is conducted as to the outcome of the examination. The [possible outcomes](#) are Pass, Conditional Pass, Adjourned, or Fail (with several subsequent options). A majority of examiners must agree to an outcome of Adjourned, Conditional pass or Fail and repeat the candidacy. All or all but one of the examiners must agree to an outcome of Pass, Fail with a recommendation to terminate the doctoral program, or Fail with a recommendation to change of category to a Master's program. If the Candidacy Committee fails to reach a decision, the department will refer the matter to the Dean, FGSR, who will determine an appropriate course of action.
9. The graduate student is recalled and the decision explained and feedback given.
10. The Chair completes the required paperwork and submits it to the Graduate Program Office within 7 days of the examination.

5.11.8 Candidacy Examination Outcomes

One of the following outcomes of the candidacy is appropriate:

- Adjourned
- Pass
- Conditional pass
- Fail and repeat the candidacy

- Fail with a recommendation to terminate the doctoral program or for a change of category to a master's program.

FGSR's [Graduate Program Manual Section 8.3.3](#) details these outcomes.

5.12 Final Examination

After the completion of all program requirements, including an acceptable draft of the thesis, the final examination can be planned. See [Final Examination and Program Completion](#) for guidelines.

5.13 PhD Program Monitoring

5.13.1 Timelines

SUPERVISOR	
<i>Event / Forms</i>	<i>Department Timeline</i>
Nominate supervisor: Appointment of Supervisor(s) and Supervisory Committee	<ul style="list-style-type: none"> • Supervisor identified prior to offer of admission • Submit form after student has registered
SUPERVISORY COMMITTEE	
<i>Event / Forms</i>	<i>Department Timeline</i>
Nominate supervisory committee: Appointment of Supervisor(s) and Supervisory Committee	<ul style="list-style-type: none"> • Within the first 8 months and no later than the end of the first year
Supervisory Committee meets with student to review program and progress; submits Graduate Student Supervisory Committee Meeting Report	<ul style="list-style-type: none"> • Annually, or more often as deemed appropriate by the supervisor
SPECIALIZATION	
<i>Event / Forms</i>	<i>Department Timeline</i>
Choose specialization, if any. FGSR advised via email from the LMP Grad Program Office.	<ul style="list-style-type: none"> • Within the first year of the program, and after completion of at least one of the associated courses.
PROGRAM REQUIREMENTS	
<i>Event / Forms</i>	<i>Department Timeline</i>
Course work (6 or 12 UCW)	<ul style="list-style-type: none"> • Within the first 3 years <ul style="list-style-type: none"> • IDP due within 12 months of program start
Ethics training	
Professional Development requirement <ul style="list-style-type: none"> • IDP and 8 hours of professional development activities 	
Rounds presentation	
Rounds attendance (≥60% in each of year 1,2 and 3)	
PhD PROPOSAL	
<i>Event / Forms</i>	<i>Department Timeline</i>
Student must submit a PhD proposal to the LMP Graduate Studies Committee	<ul style="list-style-type: none"> • Within the first 2 years
CANDIDACY EXAMINATION	
<i>Event / Forms</i>	<i>Department Timeline</i>
Candidacy examination	<ul style="list-style-type: none"> • Within the first 3 years • LMP expects completion within 6 months of acceptance of the PhD proposal. • Must be not less than six months prior to final examination.
Recommends Candidacy Examining Committee and exam date: Notice of Examining Committee & Examination Date	<ul style="list-style-type: none"> • Submit at least four weeks prior to exam • Copy of the Notice and Instructions to Candidacy Examining Committee is sent to examiners and student

Submit Candidacy Exam document to the Examining Committee	<ul style="list-style-type: none"> At least two weeks prior to the exam
After successful examination, submit Report of Completion of Candidacy Examination form	<ul style="list-style-type: none"> Within 7 days
After an unsuccessful examination, department recommends course of action in writing to FGSR	<ul style="list-style-type: none"> Within 7 days
FINAL ORAL EXAMINATION	
<i>Event / Forms</i>	<i>Department Timeline</i>
All Supervisory Committee members declare in writing that the thesis is adequate to proceed to the final oral examination by signing the Departmental Acceptance of Thesis	<ul style="list-style-type: none"> Submit prior to setting examination date and before the thesis is sent to the external examiners
Supervisor should make contact with a potential External Examiner to gauge willingness to participate and determine availability. Tentative date(s) should be established and agreed upon by the external and the supervisory committee. Thought should be given to the composition of the rest of the examining committee, and their availability also established	<ul style="list-style-type: none"> Approximately three months prior to examination
Department submits Approve External Reader or Examiner for Final Doctoral Oral Examination form, the FoMD PhD External Examiner Conflict of Interest Checklist and examiner's CV to the Faculty of Medicine & Dentistry (Associate Dean, Research, Graduate Studies). LMP invites external examiner after approval by FoMD	<ul style="list-style-type: none"> Submit form at least 8-10 weeks prior to exam
Supervisor can apply to FGSR for funds to support External Examiner's travel (Request for Funds for External Examiner Travel)	<ul style="list-style-type: none"> Submit at the same time as the <i>Request to Invite External Examiner</i>
Recommends Examining Committee and exam date: Notice of Examining Committee & Examination Date	<ul style="list-style-type: none"> Submit Notice at least four weeks prior to examination Copy of the Notice is sent to examiners and student
Ensure that the External Examiner and Examining Committee and Chair receive the thesis	<ul style="list-style-type: none"> At least four weeks prior to examination
If required: Request to Restrict Access to a Thesis	<ul style="list-style-type: none"> Request must be made prior to or at the same time as submission of the <i>Thesis Approval / Program Completion</i> form to FGSR, for a period of up to one year
Report examining committee's decision on Thesis Approval / Program Completion form	<ul style="list-style-type: none"> Submit form immediately after all signatures are obtained and within six months of the exam
Student must submit an electronic copy of the thesis to FGSR.	<ul style="list-style-type: none"> Within six months of examination

6 Supervisory Committee Meetings

- It is ultimately the responsibility of the supervisor to ensure that the graduate student has annual supervisory committee meetings.
- Annual meetings are considered to be minimal and if possible, more frequent meetings are encouraged.
- All supervisory committee members are expected to attend.
- Supervisory committee meetings are to be chaired by the supervisor; however, a request can be made to the LMP Graduate Coordinator to select a Chairperson for the Supervisory Committee Meeting other than the supervisor. Such requests can be made by the graduate student, Graduate Coordinator, supervisor, Supervisory Committee members, or the Chair of the Department of LMP. It shall be at the discretion of the Graduate Coordinator if this request is to be granted after consultation with the necessary individuals.

The supervisor and student must work together to complete the [LMP Graduate Student Supervisory Committee Meeting Report](#) form. Electronic copies of this completed form, an updated CV, and the student's progress report/slide presentation must be submitted to impgrad@ualberta.ca within 7 days of the meeting. This package will then be forwarded by the Graduate Program Office to all Supervisory Committee members, and the Graduate Coordinator, for a final approval period. Minor edits or corrections can be made by the student or supervisory committee at this time. After the approval period, the completed report will become official and will be included in the student's permanent file.

- The Report is particularly important when decisions such as when to write the thesis are made. Filling out the form can save the supervisor and graduate student from potential conflicts later.
- The graduate student should be made aware at each supervisory committee meeting whether they are making satisfactory or unsatisfactory progress.

6.1 Recommended Format

1. Seven days prior to the meeting the student will provide all members of the supervisory committee with a short Progress Report. This report should be approximately four pages in length and deal succinctly with the following issues:
 - Background
 - Project objective
 - Hypotheses being tested since the last meeting
 - Summary of research progress
 - Difficulties or issues that have impeded progress (if any)
 - Hypotheses to be tested in next 6-12 months
 - Append list of courses taken (or being taken with grade attained)
 - Copies of title page and abstract of any published papers, submitted manuscripts or abstracts written since last meeting.
2. The meeting format should generally follow the format described below:
 - Brief overview of graduate student's progress by the supervisor (~5 minutes)
 - Graduate student's presentation of research results (~20 minutes)

- Questions and answers
 - Graduate student presentation of hypothesis to be tested in the following 6-12 months
 - Discussion of the objectives and proposed approaches
 - Graduate student presentation of proposed difficulties
 - Discussion of how best to deal with the issues raised above.
 - Other points of discussion, e.g. professional development, etc.
3. The objectives of the meeting are:
- Keep committee members apprised of progress
 - Assess the project results and progress
 - Define problems in the project and, in a positive fashion, find creative solutions
 - Review the project objectives and focus.

7 Professional Development and Career Guidance

FGSR recognizes that professional development (PD) for graduate students is becoming an increasingly important factor to funding agencies and future employers. Many valuable resources for students can be found on its [Professional Development](#) site.

Professional Development activities include but are not limited to:

- Attendance at professional development sessions
- Development and maintenance of a CV or resume
- Development of a Research Dossier
- Development of a Teaching Dossier
- Participation in community service and volunteer activities
- Exploring and tracking career opportunities
- Compilation of reference letters or a reference contact list

Students may take advantage of opportunities to develop their teaching skills by participating in the [Graduate Teaching and Learning Program](#).

The mandatory course LABMP 530 contains a module on professional development that will introduce the students to methods of tracking their activities beyond the traditional CV. Each student will be required to develop a PD plan that will support their career goals.

As of Fall 2016, all incoming graduate students must complete a professional development requirement. See the appropriate section under the [MSc](#) or [PhD](#) program requirements for details as well as FGSR's [Professional Development Requirement](#) webpage.

7.1 DRiVE Days

Our department holds [DRiVE](#) (Discovery, Research, Innovation and Education) annually in conjunction with the Dr. John W. Macgregor Memorial Lecture and the Dr. RE Bell Memorial Lecture. All trainees (graduate and undergraduate students, residents, and postdoctoral fellows) as well as laboratory staff are invited to make either oral or poster presentations. Various prizes are awarded in the Research & Discovery category as well as the Innovation category.

There is an expectation that graduate students will attend (for at least part of the day and the dinner) even if they are not giving an oral or a poster presentation.

7.2 Teaching

The [Graduate Teaching and Learning Program](#) is open to all graduate students.

7.3 Career guidance

- Supervisors are often the primary source
- Campus resources include: [Career Centre](#) and [FGSR Professional Development](#)
- [DRiVE](#) may offer career investigation workshops

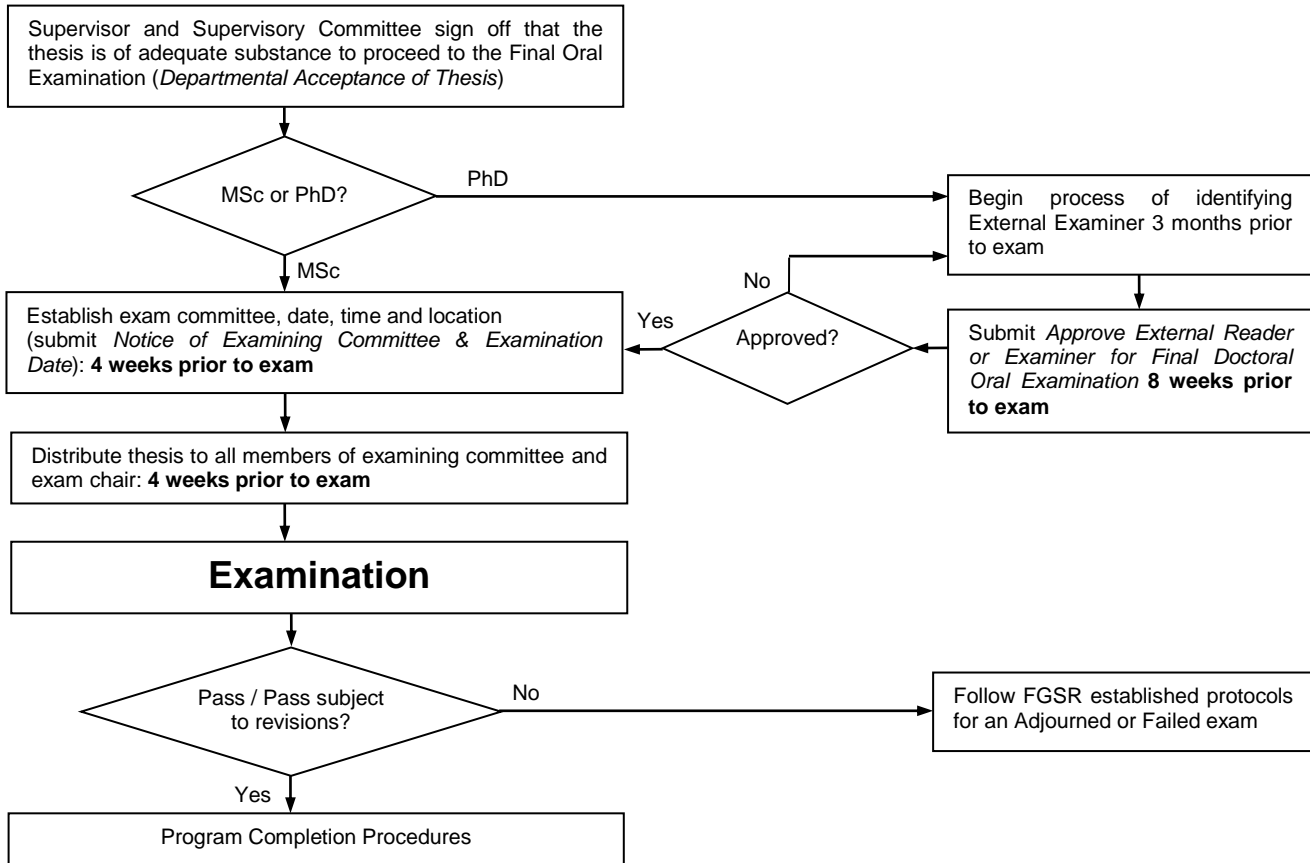
7.4 Careers

A degree is an entry point to broader opportunities and so it is important to keep options open.

Career options include (but aren't limited to):

	PhD	MSc
Academia	<ul style="list-style-type: none"> • Postdoctoral fellowship – potentially leading to faculty positions (research and/or teaching) • Professor/instructor • Project management 	<ul style="list-style-type: none"> • Research associate • Professor/instructor
Government	<ul style="list-style-type: none"> • Scientific position/researcher • Disease surveillance • Project management 	<ul style="list-style-type: none"> • Scientific position • Disease surveillance
Industry	<ul style="list-style-type: none"> • Lead researcher • Research associate • Project management 	<ul style="list-style-type: none"> • Research associate • Project management
Health Care	<ul style="list-style-type: none"> • Clinical fellowship: clinical biochemistry, clinical microbiology, clinical cytogenetics • Disease surveillance • Administrative role 	<ul style="list-style-type: none"> • Disease surveillance • Research associate • Administrative role
Health Foundations	<ul style="list-style-type: none"> • Administrative role 	<ul style="list-style-type: none"> • Administrative role
Health Professional Organizations	<ul style="list-style-type: none"> • Administrative role 	<ul style="list-style-type: none"> • Administrative role
Scientific Journals	<ul style="list-style-type: none"> • Writer/editor • Administration 	<ul style="list-style-type: none"> • Writer/editor • Administration
Writer	<ul style="list-style-type: none"> • Freelance writer 	<ul style="list-style-type: none"> • Freelance writer

8 FINAL EXAMINATIONS AND PROGRAM COMPLETION



- When a graduate student has completed the research project and has developed a body of publishable data, the graduate student should, after explicit approval by the Supervisory Committee, begin writing the thesis.
- Doctoral students are strongly encouraged to have at least three publications before completion of their degree. At a minimum, one of these publications should be a first author paper in press prior to the final examination. Publication of thesis work is not a requirement for graduation.
- There are two general formats available for a thesis: the traditional and the paper format. See FGSR's [Format your thesis](#) for required thesis specifications (structure of the thesis, paper, margins, etc.).
- The following should be noted regarding a graduate student's thesis:
 - Only work done by the graduate student can be included in the thesis.
 - Since many papers have multiple authors, the graduate student's contribution to each paper must be delineated.
 - All collaborative efforts and technical assistance must be acknowledged in the thesis.
 - The final examination can be planned after completing an acceptable draft of the thesis.
 - Students are encouraged to consult the LMP Guidelines for Thesis Preparation.

8.1 Guidelines for Thesis Preparation

Students are encouraged to consult the posted [thesis preparation guidelines](#).

8.2 Master's Final Examination

8.2.1 MSc Final Examination Timelines

- The timeline for planning the final examination is long and it is important to consider the following points:
- After the completion of an acceptable draft of the thesis (normally determined by the graduate student's supervisor but in exceptional circumstances by the Chair of the Department of Laboratory Medicine & Pathology or the Dean of the Faculty of Graduate Studies and Research), the thesis is then submitted to the other members of the Supervisory Committee for their review (normally allow 1 to 2 weeks for the review of the thesis).
- Students are expected to use the [Thesis Preparation Checklist](#) and submit a copy of the checklist along with their thesis to their supervisory committee.
- The supervisor and all members of the Supervisory Committee must then certify in writing that they believe that the thesis is of sufficient quality to proceed to a thesis examination by signing the [Departmental Acceptance of Thesis](#) before the examination can be scheduled.
- Upon acceptance of the thesis, the Examining Committee should be appointed. The supervisor notifies the LMP Graduate Program office of the composition of the examining committee, the exam chair, the date, time and location. The LMP Graduate Program office will generate and obtain signatures on the [Notice of Examining Committee & Examination Date](#) **at least 4 weeks** prior to the proposed examination date and submit the completed form to FGSR.
- Members of the Examining Committee, including the chair, must receive the thesis **4 weeks prior** to the examination. The student provides copies of the thesis to the examiners.
- The graduate student should be aware of deadlines to be met for submitting the final document to the Faculty of Graduate Studies and Research for spring or fall convocations.

8.2.2 MSc Final Examining Committee

- In Laboratory Medicine & Pathology, the MSc Examining Committee has a minimum of four examiners who must all attend the examination, and consists of the graduate student's Supervisory Committee plus an additional arm's length examiner.
- **At least half** of the examiners on every examining committee must hold a degree which is equivalent to or higher than the degree being examined. (FRCP is considered the equivalent of a master's degree.)
- **At least half** of the examiners on every examining committee must meet the employment requirement: current or retired tenured or tenure-track Faculty, current or retired Faculty Service Officer, or current Special Continuing ([Academic Staff Categories A1.1, A1.3, C1.1](#)). Examiners with clinical appointments are permitted, but do not satisfy this employment requirement.
- The exam is chaired by the LMP Graduate Coordinator or designate. A designate must be a faculty member in the Department of Laboratory Medicine & Pathology who is not the student's supervisor.
- Roles may be combined.

([FGSR Grad Program Manual Section 8.2](#))

8.2.3 MSc Final Examination Guidelines

- The MSc final exam (thesis defence) normally involves an initial 20-30 minute presentation by the graduate student of their thesis work followed by two rounds of questions.
- The role of the Chair of Examining Committee is to:
 - Moderate the proceedings;
 - Ensure that a fair examination occurs; and
 - Report the results to the Graduate Studies Committee.
- If the chair is not a member of the examining committee, the chair does not vote.
- Exam questions usually are concerned with the thesis, but not exclusively so.
- The questions are set to enable the Examining Committee to form an opinion on the quality of the candidate's thesis work as well as his/her capability to comprehend its significance in the context of the field.
- Thus, both the document and the candidate are being examined.
- The Chair of the Department, if not already a member of the Examining Committee, may attend the final exam as an observer.
- With the exception of the Dean, FGSR, or Dean, FoMD, or a Pro Dean (Dean's representative), who may participate fully in the examination, persons other than the examiners may attend only with the prior approval of the Dean, FGSR, or Dean FoMD, or the chair of the examining committee. With the possible exception of the Pro Deans, all examiners must be either active in the general subject area of the student's research, or bring relevant expertise to the assessment of the thesis.
- Visitors may not participate in the committee's discussion concerning its decision on the student's performance and must withdraw before such discussion commences.

8.3 PhD Final Examination

8.3.1 PhD Final Examination Timelines

- The timeline for planning the final examination is long and it is important to consider the following points:
- After the completion of an acceptable draft of the thesis (normally determined by the graduate student's supervisor but in exceptional circumstances by the Chair of the Department of Laboratory Medicine & Pathology or the Dean of the Faculty of Graduate Studies and Research), the thesis is then submitted to the other members of the Supervisory Committee for their review (normally allow 1 to 2 weeks for the review of the thesis).
- Students are expected to use the [Thesis Preparation Checklist](#) and submit a copy of the checklist along with their thesis to their supervisory committee.
- The supervisor and all members of the Supervisory Committee must then certify in writing that they believe that the thesis is of sufficient quality to proceed to a thesis examination by signing the [Departmental Acceptance of Thesis](#) before the examination can be scheduled. The Faculty of Graduate Studies and Research requires this certification and it should be done before an external examiner is selected or a date for the exam is set.
- The interpretation endorsed by the Department of Laboratory Medicine & Pathology is that the thesis is of a textual quality equivalent to that of a manuscript being submitted for publication to

a high quality journal and that the committee members are comfortable with the scientific content of the thesis.

- If the committee does not unanimously approve the thesis, the graduate student may appeal that decision to the department's Graduate Studies Committee.
- Once the thesis has been approved by the Supervisory Committee, an External Examiner can be identified.
- The External Examiner is initially identified by the graduate student and supervisor, the supervisor then contacts the potential examiner to determine whether they would be prepared to act as an examiner for this thesis and determine approximate dates for the exam.
- The student or supervisor may not communicate directly with the external examiner about thesis content prior to the examination.
- The supervisor nominates the External Examiner submitting the [Approve External Reader or Examiner for Final Doctoral Oral Examination](#) as well as the [FoMD PhD External Examiner Conflict of Interest Checklist](#) to the LMP Graduate Program office. The nomination requires submission of the potential examiner's CV (electronic format) which documents and examines research competence and experience in supervising graduate students at the PhD level. The Faculty of Medicine and Dentistry approves the nomination; the LMP Graduate Coordinator sends the letter of invitation.
- **A lead-time of two months** before the exam date should be allowed for the approval of a prospective External Examiner or Reader.
- After approval of the external examiner has been received, the Examining Committee should be appointed. The supervisor notifies the LMP Graduate Program office of the composition of the examining committee, the exam chair, the date, time and location. The LMP Graduate Program office will generate and obtain signatures on the [Notice of Examining Committee & Examination Date at least 4 weeks](#) prior to the proposed examination date and submit the completed form to FGSR.
- The Examining Committee, including the chair, must receive the thesis **4 weeks prior** to the examination. The student provides copies of the thesis to the examiners.
- The graduate student should be aware of deadlines to be met for submitting the final document to the Faculty of Graduate Studies and Research for spring or fall convocations.

8.3.2 PhD Final Examining Committee

- According to FGSR policy, the PhD final Examining Committee will consist of the Supervisory Committee (*ex-officio* examiners), to which at least two arm's length members are added, for a **minimum of five**.
- One of the arm's length examiners must be an External Examiner (a member from outside the University who attends the exam in person or via teleconference). External Readers are not permitted by the Faculty of Medicine & Dentistry.
- The exam is chaired by the LMP Graduate Coordinator or designate. A designate must be a faculty member in the Department of Laboratory Medicine & Pathology who is not the student's supervisor.
- Examination chairs for doctoral examinations are not to be examiners and their sole role is as chair of the examination.
- **At least half** of the examiners on every examining committee must hold a degree which is

equivalent to or higher than the degree being examined. (FRCP is considered the equivalent of a master's degree.)

- **At least half** of the examiners on every examining committee must meet the employment requirement: current or retired tenured or tenure-track Faculty, current or retired Faculty Service Officer, or current Special Continuing ([Academic Staff Categories A1.1, A1.3, C1.1](#)). Examiners with clinical appointments are permitted, but do not satisfy this employment requirement.
- Roles may be combined.

([FGSR Grad Program Manual Section 8.2](#) and [FGSR Grad Program Manual Section 8.3.4](#))

8.3.3 PhD Final Examination Guidelines

- The candidate is required to present a public seminar based on the thesis, usually just prior to the final exam.
 - Members of the examining committee must attend the public seminar and any member of the University community and other guests are free to attend the seminar and question the candidate on any aspect of the presented research during the question period following the seminar.
 - The Chair of the examination will moderate the question period so that it does not result in the discussion of material that is more appropriate for the examination.
 - The presentation plus questions is generally approximately one hour long.
 - Members of the examining committee (including the supervisor) must refrain from questions and comments during the presentation and question period.
 - Immediately after the seminar, the Examining Committee convenes for the examination, which typically lasts 2-3 hours.
- Exam questions usually are concerned with the thesis but do not need to deal exclusively with the thesis.
 - The questions are set to enable the committee to form an opinion on the quality of the candidate's thesis work as well as his/her capability to comprehend its significance in the context of the field;
 - Thus, both the document and the candidate are being examined.
- The role of the Chair of Examining Committee is to
 - Moderate the proceedings;
 - Ensure that a fair examination occurs; and
 - Report the results to the Graduate Studies Committee.
- The Chair of the Department, if not already a member of the Examining Committee, may attend the final exam as an observer.
- Except for the Dean, FGSR, the Dean of the department's Faculty, or a Pro Dean (the representative of the Dean, FGSR), who may participate fully in the examination, persons other than the examiners may attend only with the approval of the Dean, FGSR, the Dean of the department's Faculty, or the chair of the committee.
- Visitors may not participate in the committee's discussion concerning its decision on the student's performance and must withdraw before such discussion commences

8.4 Teleconferencing and Attendance of Examiners at the Final Examination

- All Examiners must be present at the final examination (for both the MSc and PhD exams)
- If they are unable to attend the exam, the exam cannot proceed and must be deferred until such time as the examiners can be present.
- The presence of all Examiners “in person” is, however, not necessary. Prior arrangements may be made to allow an examiner (frequently the External Examiner in the case of PhD final exams) to participate through teleconferencing, recognizing that the teleconferencing examiner does not have the opportunity to visually inspect diagrams or documents that are produced during the examination. The term 'teleconferencing' is used here generically to include all forms of distance conference facilitation including telephone, video and electronic communication. Examiners participating in examinations by this means are considered to be in attendance.

8.5 Outcomes of MSc and PhD Final Examinations

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.

FGSR's [Graduate Program Manual Sections 8.3.2 and 8.3.4](#) detail these outcomes.

8.6 Final Examination Protocol

For Master's final examinations:

- a. there is no requirement for a public presentation of their research. MSc students deliver a brief presentation (20-30 minutes) of their research during the closed examination.

OR

- b. students may choose an optional public presentation of their research (20-30 minutes). The department must be advised of the public presentation when the exam is booked, i.e. at the time the exam noticed is signed by the supervisor. The presentation can be open to the public with a department notice sent to faculty and trainees, or can be limited to a smaller group.

For PhD final examinations, a public presentation (~45 minutes) is required and precedes the closed portion of the examination.

LMP recommends the following protocol for the Final Examination:

1. At the beginning of the exam, the Chair introduces the graduate student and the Examining Committee members.
 - a. PhD students and MSc students who have opted for a public presentation deliver their presentation at this time. Only members of the public are invited to ask questions at the end of the presentation. After the question period, they are asked to leave the room.
2. The student is then asked to leave the room. Copies of the student's CV and UAlberta transcript are

distributed, and the committee reviews his/her undergraduate background and graduate program.

3. The Examining Committee discusses and agrees upon the examination format, specifying the sequence of the events including:
 - a. the order of questioning (usually, the most external to least external):
 - i. the arm's length member(s),
 - ii. the Supervisory Committee members, and
 - iii. the graduate student's supervisor(s).

The supervisor does not usually ask questions except for the purpose of clarification.

The Chair primarily moderates the examination process, but may ask questions as well.

- b. the number of rounds of questioning and the length of each round:

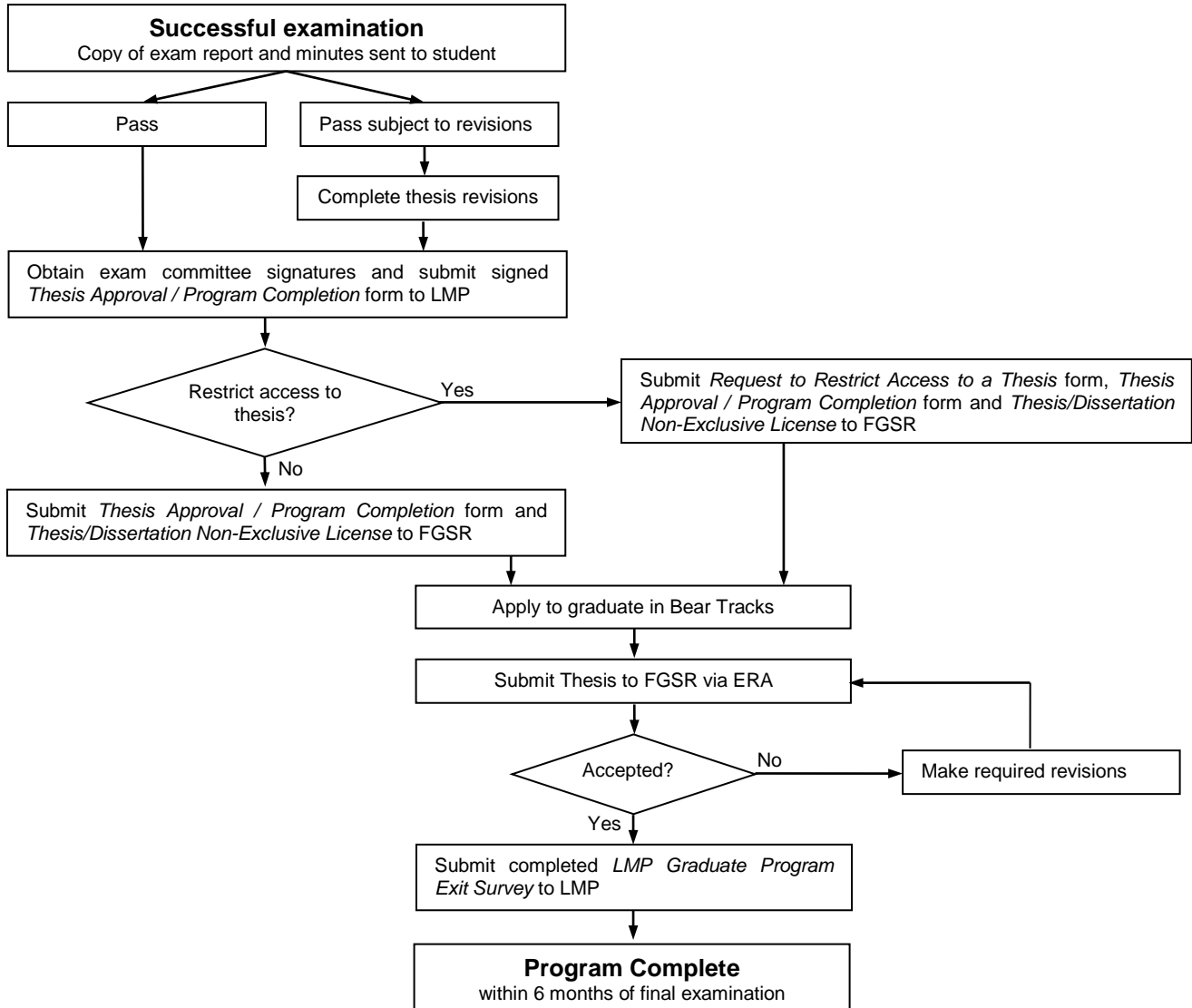
Usually two rounds of questions, with 15 minutes per examiner for the first round and 5 minutes for the second round. Additional rounds of questions are optional. There will be a brief break (5-10 min) after the first round of questions.

The committee also determines whether interruptions by other examiners will be permitted. If yes: when a pertinent point arises, another examiner may interrupt with a question/brief comment. This time will count as part of that examiner's time allotment.

4. The graduate student is then asked to rejoin the Examining Committee, the examination format is explained to the student, and the examination begins.
 - a. MSc students who did not opt for a public presentation deliver their research presentation (20-30 min).
 - b. For PhD students and MSc students who opted for a public presentation, questioning begins immediately following the explanation of the examination format.
5. The agreed upon number of rounds of questioning follows (with the Chair keeping a record of the questions asked), after which the student may ask questions and offer comments or clarifications regarding the examination.
6. The student is asked to leave the room.
7. The Chair poses two rounds of questions to the Examining Committee:
 - a. First round: What is the opinion of each examiner (strengths and weaknesses) on the quality of the thesis, the oral presentation, and the defence?
 - b. Second round: What is the recommendation of each examiner for the outcome?
8. A formal vote is conducted as to the outcome of the examination. (The Chair does not vote if not a member of the Examining Committee.) The possible outcomes are Adjourned, Pass, Pass with revisions, or Fail (with several subsequent options).
 - a. If the outcome is Adjourned, the majority of examiners must be in agreement.
 - b. If the outcome is Pass, Pass subject to revisions, or Fail, all or all but one of the examiners must be in agreement.
 - c. 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.
9. The graduate student is recalled and given the outcome and feedback on the examination.
10. The Chair completes the required paperwork and submits it to the LMP Graduate Program Office

within 7 days of the examination.

8.7 Program Completion Procedures



Throughout this program completion period, the student is reminded to watch for [pertinent deadlines](#), both those relating to registration/tuition costs, and those relating to convocation.

Subsequent to a successful final examination:

- The LMP Grad Program office will provide the student with a copy of the final exam report and minutes.
- When the exam outcome is “Pass”, the *Thesis Approval/Program Completion* form is signed by all committee members at the time of the exam and submitted to the LMP Graduate Program Office immediately thereafter.
- When the exam outcome is “Pass subject to revisions”, the student completes the final thesis revisions as outlined in the exam report.

When final thesis revisions have been approved by the supervisor(s) and any other committee member who withheld signature at the time of the exam, obtain the required signature(s) on the *Thesis Approval/Program Completion* form and submit the form to the LMP Graduate Program Office. (The *Thesis Approval/Program Completion* form is held at the grad program office until needed for signatures.)

- The LMP Graduate Program office submits *Thesis Approval/Program Completion* form to FGSR or the student may arrange to pick the form up and deliver to FGSR in person.
- If there is a need to restrict access to the thesis, the [Request to Restrict Access to a Thesis](#) must be submitted prior to or at the same time as the *Thesis Approval/Program Completion* form.
- Apply to graduate in [Bear Tracks](#) (before submission of thesis).
- Once the *Thesis Approval/Program Completion* form has reached FGSR, the student may submit the [University of Alberta Thesis/Dissertation Non-Exclusive License form](#) to FGSR. Alternatively, the student may choose to take the *Thesis Approval/Program Completion* form, the Request to Restrict Access to a Thesis form (if needed), and the non-exclusive license form to FGSR in person at the same time, after which the thesis can be submitted.
- After submission of all forms to FGSR, the thesis can be submitted to [Thesis Deposit](#). If FGSR requires revisions to the thesis (typically formatting issues), the student will receive an email with instructions for modifications and re-submission.
- Once approved, the thesis will be published in [ERA](#) (Education & Research Archive--the University of Alberta Libraries' digital repository)

Students are encouraged to attend the [convocation ceremony](#) held in their honour. The student's degree is conferred at this ceremony. The parchment (the official documentation of the student's academic credential containing the student's name, degree/specialization and academic honors if applicable) is given at this time. Students unable to attend Convocation may pick up their parchment in person during specified dates following the ceremony; if it is not picked up, it will be mailed to the current address on the student record.