



PhD Public Health Sciences

Department of Public Health Sciences

Student Handbook

2021-2022 Academic Year

Queen's University

Kingston, Ontario, Canada

<https://phs.queensu.ca/graduate-programs/phd-epidemiology>

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Biostatistics specialization details added



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Dear PhD Student,

On behalf of the Department of Public Health Sciences, we are pleased to welcome you to the doctoral program!

Our goal is to help you become an independent investigator capable of providing leadership in improving public health in Canada and beyond.

The dynamic and growing field of public health sciences needs graduates who can effectively create new scientifically-sound health knowledge and provide health research leadership. By completing your PhD with us, you will be prepared to work in academia, or a public, non-profit or private health sector as a highly skilled professional able to address health research questions using valid and robust research methodologies.

This student handbook includes important information on our program, faculty, and university services, including current degree requirements. Please review it carefully because it will likely answer many of your questions. For additional information about graduate student life at Queen's and up to date information on the university's formal policies and procedures, please consult the Queen's University School of Graduate Studies at <http://www.queensu.ca/sgs/>

If you have any questions or require further information, please do not hesitate to contact our PhD Graduate Assistant at epid@queensu.ca.

Regards and best wishes,

PhD Program Committee
Department of Public Health Sciences
Queen's University

Table of Contents

DEPARTMENTAL OVERVIEW	1
PHD PROGRAM OVERVIEW	2
PROGRAM CONTACTS	2
PHD PROGRAM ORGANIZATION AND STRUCTURE	2
ADMISSION REQUIREMENTS	3
ACADEMIC REQUIREMENTS	3
ADDITIONAL REQUIREMENTS	3
IDENTIFYING A SUPERVISOR	4
DEGREE REQUIREMENTS	4
SUPERVISION	5
SUPERVISOR	5
THESIS SUPERVISORY COMMITTEE	6
FUNDING AND FINANCIAL ASSISTANCE	6
COURSEWORK	6
CORE COURSES	6
ADDITIONAL ELECTIVE COURSES OFFERED IN THE DEPARTMENT	7
EXAMPLES OF ELECTIVE COURSES OFFERED BY OTHER DEPARTMENTS	7
CANDIDACY EXAMINATION	7
PURPOSE AND TIMING	7
EXAMINATION COMMITTEE AND EVALUATION	8
THESIS PROCESS AND REQUIREMENTS	8
OUTLINE	9
THESIS PROPOSAL AND PROPOSAL DEFENSE	10
ETHICS	11
THESIS AND THESIS DEFENSE	11
STUDENT PROGRESS	12
STUDENT WELLNESS SERVICES	13
ADDITIONAL ACADEMIC POLICIES	13
ACADEMIC INTEGRITY	13
APPEAL OF AN ASSIGNED GRADE IN A GRADUATE COURSE	13
COURSE FAILURE	14
ACCOMMODATION OF GRADUATE STUDENTS WITH DISABILITIES	14
CONFLICT OF INTEREST	14
GUIDELINES TO INTELLECTUAL PROPERTY	14
OPPORTUNITIES FOR STUDENT INVOLVEMENT IN THE DEPARTMENT	15
WORKSPACE, EQUIPMENT AND FACILITIES	15
PROFESSIONAL SKILLS DEVELOPMENT FOR GRADUATE STUDENTS	16
EXPANDING HORIZONS	16
CAREER SERVICES	16

CENTRE FOR TEACHING AND LEARNING	17
DISSERTATION BOOT CAMP.....	17
THREE MINUTE THESIS (3MT)	17
STUDENT ACADEMIC SUCCESS SERVICES	17
TIPS & RESOURCES WEBPAGE	17
QUEEN’S UNIVERSITY INTERNATIONAL CENTRE (QUIC).....	17
QUEEN’S LIBRARIES	17
HANDBOOK FOR INTERNATIONAL STUDENTS.....	17
STUDENT WELLNESS SERVICES	18
HEALTH SERVICES.....	18
COUNSELLING SERVICES.....	18
ACCESSIBILITY SERVICES.....	19
SCHOOL OF GRADUATE STUDIES ON-SITE COUNSELLOR.....	19
PEER ADVISING (SOCIETY FOR GRADUATE AND PROFESSIONAL STUDENTS, SGPS)	19
ACADEMIC COUNSELLING, CONFIDENTIAL ADVISING	19
ATHLETICS AND RECREATION CENTRE.....	20
LIST OF APPENDICES	20
APPENDIX 1: DEGREE LEARNING EXPECTATIONS.....	21
APPENDIX 2: CONCEPTS, COMPETENCIES AND ACTIVITIES THAT CAN BE COVERED IN A PHD SPECIALIZATION IN EPIDEMIOLOGY.....	27
APPENDIX 3: PHD PROPOSAL DEFENSE SCHEDULING FORM	32
APPENDIX 4: PHD THESIS DEFENSE SCHEDULING FORM	33
APPENDIX 5: PHD PROGRAM TERM PROGRESS REPORT.....	34

Departmental Overview

Established in 1968, the Department of Public Health Sciences (formerly Community Health and Epidemiology) was created to study the incidence of diseases in Canadian communities and to find ways to help reduce public health risk. Since then, the fields of community health and epidemiology have broadened considerably. Department members now conduct research and teach in areas as diverse as health economics, mental health, program evaluation, and biostatistics. The Departmental offices are in Carruthers Hall at the center of the Queen's campus.



Carruthers Hall, Queen's University

The mission of the department is to advance scientific knowledge relevant to research in epidemiology, public health and biostatistics, and to participate in the dissemination and application of scientific knowledge to address health, health care, and health system issues.

To achieve this mission, the department is home to several graduate programs:

- a two-year, thesis-based Master of Science (Epidemiology);
- a 12-month Master of Science specializing in Biostatistics (collaborative with the Department of Mathematics and Statistics);
- a 12-month Master of Public Health program (for experienced health professionals);
- a 16-month Master of Public Health professional program and;
- a four-year PhD program with an option to specialize in Epidemiology or Biostatistics.

PhD Program Overview

The PhD program in the Department of Public Health Sciences at Queen's University has been in existence since 2006. It was designed to build on the existing strengths of our academic faculty.

The program objective is to graduate individuals who are capable of functioning as independent investigators within academic (or equivalent) research positions, or who can occupy positions of professional leadership in public health- or health-related agencies where research is an important function.

Through coursework students demonstrate a mastery of theories, methodological concepts, and substantive knowledge integral to their research area. In the Comprehensive Exam, students demonstrate their in-depth knowledge in theoretical and applied methods; and an ability to apply that knowledge to their research area.

Through the dissertation process, students demonstrate the ability to undertake research including the ability to critically appraise and synthesize appropriate literature; develop researchable questions; design practical and feasible studies; write scientific protocols that summarize research plans and demonstrate an understanding of key methodological issues; collect primary or process secondary data, where the latter are not 'research ready' at the outset; analyze and interpret data; and understand the implications of findings within the appropriate context.

Students also have opportunities to present their research in seminars and scholarly academic meetings. Students gain an ability to communicate scientifically, both in terms of publishing research findings in reputable journals, and by presenting research findings to their respective research communities. Some students also gain experience as teaching assistants.

Program Contacts

PhD Program Director: Patti Groome PhD groomep@queensu.ca

PhD Program Administrator: Sue Preston epid@queensu.ca

Department Public Health Sciences website: <https://phs.queensu.ca/>

PhD Program Organization and Structure

The Department of Public Health Sciences and all of its graduate programs fall under the School of Medicine in the Faculty of Health Sciences. PhD students work with a Faculty supervisor (or co-supervisors); at least one of these supervisors must have a faculty appointment in the Department. A full list of core and adjunct faculty members, and information about their research interests, is available on the Public Health Sciences website: <https://phs.queensu.ca/faculty-staff>

Students with health research-related Masters level preparation can enroll in our PhD program and work in any of the areas of research expertise in our department. These include but are not limited to: qualitative, mixed- and community-based methods used in the study of the social determinants of health, the use of health and public health services, epidemiology, health equity, global health, Indigenous health, health economics, and biostatistics. The program's Degree Learning Expectations are outlined in Appendix 1. Students with Masters level research-related preparation in epidemiology (or its equivalent) may apply to

the Specialization in Epidemiology if they wish to continue with a focus on epidemiology for their PhD. Students in this specialization will study advanced epidemiologic methods and biostatistics and conduct a thesis using those methods. Research topics and methods covered by this specialization are also broad, including disease etiology, clinical epidemiology, health services research and more (see Appendix 2). Students with Masters level research-related preparation in biostatistics (or its equivalent) may apply to the Biostatistics specialization. Students in this specialization will study advanced biostatistics methods and epidemiology and conduct a thesis using those methods. Research topics and methods covered by this specialization are also broad, including statistical methodological research in the context of public health, biomedical, or clinical studies.

Admission Requirements

The PhD program is administered under the rules and regulations of the School of Graduate Studies. These regulations are outlined more fully by the Queen's School of Graduate Studies (www.queensu.ca/sgs/).

Academic Requirements

- a minimum A- average (equivalent GPA of 3.7 or 80%) in a Master's degree program in a related discipline such as (but not limited to) health sciences, epidemiology, biostatistics, statistics, health promotion, health geography, economics.
- a minimum A- average (equivalent GPA of 3.7 or 80%) in the last 20 post-secondary courses
- demonstrated research competency and potential, which is normally achieved via a thesis-based or a research-project based Master's degree.

Applicants who have not completed a thesis or research project will be considered on a case-by-case basis. In these cases, applicants should show evidence of interest in research and experience including relevant coursework, publications and/or work experience.

Applicants who express an interest in our Specialization in Epidemiology option should have Master's-level training or equivalent in epidemiology. Applicants who express an interest in our Specialization in Biostatistics option should have Master's-level training or equivalent in Biostatistics.

Full-time students are accepted into the program for a September start date each year. The application deadline is January 31, 2021 but applications continue to be accepted until the program is full.

Additional Requirements

- Two copies of transcripts from each post-secondary institution attended
- Two academic reference letters
- International students from a non-English speaking university or students with English as a second language will require a minimum TOEFL score of 600 (paper) or minimum TOEFL iBT scores of: writing (24/30); speaking (22/30); reading (22/30); listening (20/30); for a total of 88/120. Please note applicants must have the minimum score in each test as well as the minimum overall score. The TOEFL institution code is 0949 and the department code is 50.
- For applicants whose degrees are from universities outside of Canada, a Graduate Records Examination (GRE) score is mandatory (except for those who apply for Biostatistics specialization). A minimum score of 149 on the quantitative section is required and analytic writing and verbal reasoning scores are also considered. The GRE institution code is 0949 and the department code is 0606.

Identifying a Supervisor

Although the program will provide assistance to viable applicants in their search for a supervisor, it is ultimately the applicant's responsibility to find a faculty member (or members) who agrees to supervise their graduate research work. This process takes place prior to the final offer of admission. The selection of a supervisor is a critical decision that impacts the quality of the student's graduate experience and influences the student's career path. At the time of making an application to the PhD program, students should have a fairly clear idea about what their research interests are and approach potential supervisors with similar interests.

To this end, applicants are advised to obtain information about potential supervisors and the environment in which they will be working. As a start, the Departmental website: <https://phs.queensu.ca/> provides profiles of all of our faculty members, including descriptions of their ongoing research. It is important that, whenever possible, the applicant meets, either online or in person, with the potential supervisor to determine compatibility and have an opportunity to discuss issues such as expectations, research project support, identifying a thesis topic and scope, student funding, and strategies to ensure timely completion and quality work. The potential supervisor is required to provide a statement of support as part of the student's application package to the program and to work with the applicant to draft a plan of study.

One of the conditions under which a supervisor can accept a doctoral student is that appropriate funding has been prearranged with the supervisor, who is often expected to underwrite at least half of the student funding package. Supervisors are sometimes able to offer PhD students funding from their research grants. But students also have a responsibility to attempt to find funding by applying for internal awards and to external agencies. Therefore, students entering the doctoral program require high academic standing so that they are competitive for such awards. Potential faculty supervisors may work collaboratively with prospective students to identify internal and external sources of funding prior to acceptance and/or these applications can be made starting in the student's first year in the program.

Degree Requirements

To complete a PhD degree in the Department of Public Health Sciences, students must:

- Complete EPID902 Advanced Topics in Public Health Sciences Research and three additional half courses. The supervisor will advise the student on what coursework will best prepare them for their particular thesis area. Students specializing in epidemiology must complete EPID901 Advanced Epidemiology and EPID823 Advanced Biostatistics.
- Complete the comprehensive examination.
- Write and present a research outline.
- Write and successfully present a research proposal.
- Complete the Course on Research Ethics (CORE) online tutorial.
- Write and successfully defend their doctoral dissertation.

The following is an outline of the usual timelines for a PhD student in Public Health Sciences:

Summary and Timing of Degree Requirements for PhD*			
Year 1 (Terms 1-3)	Year 2 (Terms 4-6)	Year 3 (Terms 7-9)	Year 4 (Terms 10-12)
<p>EPID 902: Advanced Topics in Public Health Science Research</p> <p>3 additional courses. Note: Students specializing in Epidemiology must complete EPID901 and EPID823 among their additional courses.</p> <p>Completion of Comprehensive Examination</p>	<p>Completion and presentation of Research Outline. The outline presentation is optional for students who have entered the program after mini-Masters study or those who are in Biostatistics specialization</p> <p>Completion and presentation of Research Proposal</p>	<p>Dissertation Research</p>	<p>Completion and Defense of Dissertation</p>

*Students entering via the mini-MSc route can expect to finish in 3 to 3.5 years, with the research proposal presented by the end of Term 3. For further details on this route see: <https://phs.queensu.ca/graduate-programs/msc-epidemiology/mini-masters>

Supervision

The Supervisor and supervisory committee have a major role in the intellectual development of the student including the student's plan of study, comprehensive exam and doctoral dissertation.

Supervisor

Doctoral students enter the program with a Primary Supervisor who is a member of the Department and has designated School of Graduate Studies and Departmental authority to supervise PhD candidates. At the time of acceptance into the program, the Primary Supervisor will have indicated a willingness to guide the student through the entire program, including course work, comprehensive exams and the thesis. The Primary Supervisor, along with the student through fellowship/scholarship applications, is also responsible for organizing funding for four years. The Primary Supervisor acts as a mentor and role model for the student, and encourages the intellectual development and critical judgment of the student through activities of critical thinking such as engagement in methodological discussions, review of manuscripts, journal reading, grant review and writing, etc. The School of Graduate Studies' Guide to Graduate Supervision offers graduate students, faculty, and other departmental members the guidelines needed to foster productive working relationships between supervisors and graduate students.

By virtue of being a member of the Primary Supervisor's research group, students interact much more intensely with their Primary Supervisor than with other faculty. However, through coursework, interactions with research groups and participation in the life of the Department, students also have extensive contact with many other faculty members.

Supervisory Committee

By the end of the student's first term in the program, a Supervisory Committee is established by the Primary Supervisor in consultation with the student. The Committee will consist of two or three members in addition to the supervisor. Members are selected to provide expertise within the student's theoretical and/or practice area, their methodological area and their substantive area as outlined in the student's plan of study. Depending on their degree of involvement, one of the members may be designated Co-Supervisor rather than Supervisory Committee member. Note that either the Primary Supervisor or a Co-Supervisor MUST be a faculty member who is a core member of the Department and who holds a PhD in an appropriate discipline. Committee membership along with the student's revised plan of study will be reviewed by the PhD Program Committee at the end of term one.

One or two members of the Supervisory Committee who are not the Supervisor will serve on the student's comprehensive examination committee (see PHS Comprehensive Examination Guideline for further details). And throughout the degree, the Supervisory Committee should meet with the student at least once per term (three times per year) to review progress. A written accounting of these meetings should be prepared by the student and Primary Supervisor and reviewed by all Committee members.

Understanding roles, responsibilities and expectations is important in graduate study and effective communication is essential to ensuring a shared understanding. The development of strong working relationships helps to promote an excellent graduate experience. The School of Graduate Studies Supervision Handbook is a guide that provides best practices, advice and general information to assist in forming and maintaining good student-supervisor relationships and references resources that may be helpful in the pursuit of a graduate degree: <http://www.queensu.ca/sgs/>

Funding and Financial Assistance

Funding for PhD students comes from a variety of sources, including funds from the supervisor's research grants, research and teaching assistantships, internal and/or external scholarships or fellowships and other available sources. The School of Graduate Studies and Research requires that doctoral programs guarantee a minimum stipend of \$18,000 annually for four years of a student's program and our program strives to increase this minimum amount to \$25,000 where possible. PhD students are expected to apply for internal and external awards for which they are eligible. Both internal and external awards contribute towards the guaranteed minimum funding, and many external awards can increase this funding beyond the amounts mentioned above. Should the student meet the requirements and prerequisites, PhD students are also eligible to apply for teaching assistantships, and students can work as paid research assistants on non-thesis related research for up to 10 hours per week. Both of these income sources are in addition to the amount guaranteed by the department.

Coursework

All PhD students are required to take a minimum of four courses beyond the courses they would already have taken in their Master's degree. Prerequisite equivalents from other institutions will be considered for PhD students. The School of Graduate Studies Calendar contains up to date descriptions of the following courses and which courses are offered in any given year: <https://www.queensu.ca/sgs/graduate-calendar/courses-instruction/>. Course numbers beginning with 'EPID' can be found in the calendar under 'Public Health Sciences'.

Core Courses

The only required core course for all PhD students is EPID902. Students wishing to complete the Specialization in Epidemiology must take EPID901 (both Fall and Winter terms) and EPID823.

EPID 823 Advanced Methods in Biostatistics
EPID 901 Advanced Epidemiology
EPID 902 Advanced Topics in Public Health Sciences Research

Additional Elective Courses Offered in the Department

These are many of the additional courses available in the Department of Public Health Sciences. A course of study is determined with the supervisor or supervisory team.

EPID 801 Introduction to Epidemiology
EPID 802 Foundations in Public Health
EPID 803 Public Health System in Canada
EPID 804 Intermediate Epidemiology
EPID 805 Leading Evidence-Informed Action
EPID 806 Applied Research Methods for Program Planning and Evaluation
EPID 807 Health Economics
EPID 810 Controlled Clinical Trials
EPID 815 Independent Study
EPID 817 Foundations of Cancer Control
EPID 819 Clinical Epidemiology
EPID 821 Introductory Biostatistics
EPID 828 Infectious Diseases
EPID 829 Foundations in Global Health
EPID 831 Chronic Disease Epidemiology
EPID 832 Mental Health/Critical Inquiry
EPID 833 Issues in Military and Veteran Health Research
EPID 835 Environmental Public Health
EPID 837 Health Services Research

Examples of Elective Courses Offered by other Departments

In consultation with their Supervisor and in accordance with their plan of study, a student may choose to take courses from other Departments and Schools at Queen's University, or even at other Universities, to fulfill their program of study course requirements. This allows for the inherent diversity of training that may be required for PHS PhD students. Students and Supervisors can reach out to the Program Administrator or Director to learn about courses that have been taken by previous students.

Candidacy Examination

All students in the PHS PhD program are required to complete a comprehensive candidacy exam, usually within the first year of study. The exam includes written and oral components with both parts designed to assess the candidate's knowledge and competence in the core areas related to their research (e.g., epidemiology, biostatistics, health economics, etc.). Details of the comprehensive exam process can be found in the department's Comprehensive Examination Guide.

Purpose and Timing

The purpose of the Comprehensive Exam is to assess students' scholarly qualifications for their degree. Students will be evaluated for their in-depth understanding of their theoretical and/or practice area, their methodological area and their substantive area.

Students will be expected to prepare for the comprehensive examination through self-directed study based on a reading list developed in conjunction with their supervisory committee and in consultation with all comprehensive examination committee members. Faculty consultation, as appropriate, will be encouraged as the student prepares for the exam and the supervisors are encouraged to help students prepare for the exams - both written and oral. The exam will be taken after all coursework has been completed (usually in June of year one).

Examination Committee and Evaluation

The Examination Committee is made up of one or two members of the student's supervisory committee along with at least one examiner external to the supervisory committee. The Director of the PhD Program Chairs the examination committee. The student's Supervisor attends the exam and can participate in deliberations post-exam as the student's advocate. The Examination Committee will evaluate both written and oral components of the exam. All examination committee members will attend the oral examination and provide evaluations. Students must achieve a minimum grade of 75% on each of the two components. If a student does not perform satisfactorily, a remedial program of study will be recommended by the Examination Committee and the Graduate Education Committee will be notified of the expected course of action. The student will be allowed two attempts to pass the examination. If a student does not pass the examination on the second attempt, and barring any extenuating circumstances, the Comprehensive Examination Committee will recommend to Graduate Studies that the student be required to withdraw from the program.

Thesis Process and Requirements

Independent and original research and the preparation of a thesis are essential core elements of Doctoral studies. Therefore, all Doctoral students must complete a research project that culminates in a thesis that is based on original research of publishable quality. The breadth and depth of the thesis must meet normative expectations of a PhD in the student's research area. The design choices and analytic methods that can be used are wide in scope reflecting the diverse nature of the disciplines covered by this PhD program. For those students specializing in epidemiology, the scope of that discipline has been outlined in Appendix 2. The thesis process emulates the conventional process of a grant submission and involves three major milestones with progress towards these reviewed each term. Those milestones are the presentation of an outline, the defense of a thesis proposal and the completion of the thesis.

Through the dissertation process, students in general option or in Epidemiology specialization demonstrate the ability to undertake independent research including the ability to:

- critically appraise and synthesize relevant academic literature;
- develop novel hypotheses or important, researchable questions;
- design practical research studies aimed at testing these hypotheses and/or answering these research questions;
- write scientific protocols that summarize research plans and demonstrate an understanding of key methodological issues;
- collect primary or process secondary data, where the latter are not 'research ready' at the outset;
- analyze and interpret data; and
- understand the implications of findings within appropriate population health, health services/health policy, or clinical contexts.

Students in Biostatistics specialization will demonstrate in the dissertation process the ability to undertake independent research including the ability to

- critically appraise and synthesize relevant academic literature;

- develop and evaluate biostatistical methodology that has application to important public health, biomedical, or clinical problems;
- develop software and computational techniques for novel statistical methods;
- demonstrate the application of the proposed methodology and computational techniques in analyzing and interpreting real data from public health, biomedical, or clinical research; and
- understand the implications of findings within appropriate public health, biomedical, or clinical contexts.

Students also have opportunities to present their research in seminars and scholarly academic meetings. Students gain an ability to communicate scientifically, both in terms of publishing research findings in reputable journals, and by presenting research findings to their respective research communities.

Outline

Students are required to submit a 4-5 page (maximum) single-spaced outline, signed by all members of their supervisory committee no later than 15 months into the program. The purpose of the review is to provide useful feedback to the student and Supervisor/Committee prior to embarking on the full-scale thesis, and to render an assessment of whether the project, as outlined, is thesis-worthy at the PhD level.

More specifically, the reviewers will be asked to comment on whether:

1. Is the proposed study adequate and appropriate for a PhD thesis?
2. Is the project manageable in the timeframe and expectations of the PhD program?
3. Are there any methodological concerns that the student will need to consider in writing a complete proposal?

Prior to submission, the supervisor and student submit three names of faculty members for the review at the proposal stage. Two reviewers will be recruited from that list and one member of the PhD Program Committee will also be assigned the outline to review. The supervisor and student set up a meeting with these three reviewers and advise the graduate assistant of the date and time. The reviewers must be in possession of the outline for 10 full business days prior to the date of the meeting. The Supervisor is asked to provide a written record of the reviewer's feedback, which is provided to the student and put in the student's file.

It is expected that students are working with their supervisory committee throughout their first 15 months to develop their project. The purpose of the outline is to provide a mechanism to obtain constructive program-level feedback prior to embarking on full scale proposal. The content of the outline should be minimal regarding study design, methodology and analysis with the goal being to provide enough information for an assessment of the appropriateness and feasibility of the project. It is a brief sketch of the intended project that includes:

- Title
- Background and rationale
- Empirical objectives
- Study design and methods
- Data management and analysis strategy
- Ethical considerations
- Feasibility issues (e.g. ability to access required data)
- Timeline for proposal development and project completion (can be an appendix)
- Appropriateness for a PhD in Public Health Sciences re: depth and scope, originality, use of appropriate study design principles and quantitative and/or qualitative analysis
- Contributions of the student

- References (outside page limit)
- Dated names and signature(s) of thesis committee members (outside page limit)

If an outline is not deemed thesis-worthy, the PhD Program Committee-based reviewer will subsequently meet with the supervisor and student to develop a remedial action plan. Otherwise, comments and suggestions are to be taken under advisement to assist the student in conceptualizing and preparing the full thesis proposal.

The thesis proposal outline is optional for students who have entered the PhD program after having completed a mini-masters. Such students may choose to undertake this outline process if they want the perspective of additional faculty members or if their project materially changes from what was proposed at the mini-masters defense. For further details on the mini-masters route see:

<https://phs.queensu.ca/graduate-programs/msc-epidemiology/mini-masters>. The thesis outline is also optional for students in Biostatistics specialization.

Thesis Proposal and Proposal Defense

The student will write a thesis proposal to be submitted to the PhD Program no later than 21 months into the program. The student's supervisor should inform the program administrative assistant and director that the student is ready to defend the proposal at least four weeks prior to defense date. A form for this purpose is provided in Appendix 3. The form asks for suggested dates, times and reviewers. The submitted proposal must be approved by the Primary Supervisor and all supervisory committee members. Approval can be demonstrated by having the document signed before submission or submitting the document electronically with a statement indicating approval which is copied to the Primary Supervisor and all committee members. The proposal is to be submitted via email to epid@queensu.ca at least 10 full working days prior to the defense.

The thesis proposal should be polished and of comparable quality to what would be submitted for *internal review prior to an extramural grant application* with a recognition that the proposal may not represent all details of the final project as these may change as funding is obtained and/or the project starts to roll out. In particular, the proposal needs to be presented *at a time when changes are still possible and welcomed by the student and his/her committee*. The program recognizes that some changes could occur post-proposal acceptance. As such, if they think it is necessary, the student and his/her team have the opportunity to inform and get advice/approval of fundamental changes that occur during the finalization of the project planning / funding process from the proposal examiners and/or the PhD Program Committee.

The proposal should be at such a stage that the supervisory committee members have had a chance to have full input. The purpose of the review by the department is to provide input over and above that possible by the supervisory committee to maximize the chance that the final dissertation will be acceptable to external reviewers.

As such, and as stated above, the proposal presented should be a 'near final draft', which means that the project plan is mature, coherent but not necessarily fully realized on details such as final confounder identification, fully defined analysis plan, or inclusion of any minutiae such as fine details about data processing or variable capture.

The proposal is required to have finalized objectives, a solid rationale, a clear conceptual framework, defensible variable definitions, coherent progression of the plan to address the objectives, a reasonable analytic approach using appropriate methods, the right team in place, a complete assessment on feasibility, originality, and adequate scope for a PhD.

The proposal is 12 to 15 pages single spaced ideally following the standard format used by the Canadian Institutes of Health Research or NSERC. If the thesis has multiple parts that do not fit conveniently within

the CIHR or NSERC format, the student should submit a shorter proposal following this format that describes the primary component of the thesis along with a summary of no more than seven pages that describes the overall context and other components.

An oral presentation and defense of the thesis proposal will take place in a Departmental forum. The review committee consists of the Department Head (or delegate) and two reviewers (assigned by the PhD Program Director). Those present include: the PhD student, their supervisory committee members, and interested students and faculty (closed sessions are possible in the presence of extenuating circumstances).

The main purpose of the proposal defense is to allow the department to have an opportunity to determine whether the thesis project, if successfully completed, would satisfy PhD program requirements, or whether modifications should be made. Secondly, the presentation (which should be of 15-20 minutes in length) provides students with a more formal opportunity to communicate their thesis to a multi-disciplinary audience, field questions, and receive constructive feedback. Students other than the candidate being examined are also given the opportunity to ask questions.

After the presentation and questioning, the examination and thesis committee members and the student will remain to determine if the proposal can (a) proceed, (b) proceed with recommended modifications and/or conditions, or (c) not proceed. A record of this decision is kept in the student's academic file. If a recommendation is made that the student "not proceed," the Supervisor must present a remedial plan of action to the PhD Program Committee within six weeks of the defense date.

Ethics

Any research project involving human subjects regardless of whether the project is supported by grant funds must receive approval from one of the Research Ethics Boards (REB) prior to the start of the data collection and/or analysis. The approval process can take time. Students must complete an online module (Certificate on Research Ethics – CORE) for research involving human subjects prior to submitting the research proposal to the appropriate REB. Research associated with the Health Sciences and Affiliated Teaching Hospitals must be submitted to the HSREB and non-health sciences submit to the General Research Ethics Board (GREB). If you are uncertain of whether ethics is required, consult with your supervisor or the appropriate ethics office. <https://www.queensu.ca/urs/research-ethics>

Thesis and Thesis Defense

All PhD students must complete a doctoral dissertation thesis. The thesis must adhere to the requirements and formatting standards that apply for traditional style theses or manuscript style theses. Information on thesis formatting, copyright and final e-submission to Q-Space can be found on the School of Graduate Studies website: <http://www.queensu.ca/sgs/>

Once the research for the thesis is completed satisfactorily, the thesis will be written and revised according to suggestions from the Thesis Committee. Students are encouraged to take advantage of other Queen's resources such as the Writing Centre and the School of Graduate Studies' Dissertation Boot Camp as well as online resources and to check the SGS website for up to date requirements regarding submission: <http://www.queensu.ca/sgs/>

Once the student, on advice of the supervisory committee, judges that the thesis is ready to defend, the thesis must be submitted to the Department five weeks prior to defense. The Primary Supervisor should inform the PhD Program of the upcoming defense including examiner suggestions no less than two months prior to final submission. The form for this request is provided in Appendix 4.

According to School of Graduate Studies and Research policies, thesis examination committees for all doctoral programs include:

- The Dean of the Graduate School (or delegate) – Chair

- Head of the Department (or delegate)
- Supervisor and Thesis Committee members
- At least one faculty member from the Department
- At least one faculty member from another Department
- An examiner from outside of Queen's University

Prior to the examination, examiners are asked to complete a confidential report. If two or more of the examiners indicate that the thesis is not ready for defense, then the student is given the option of postponing. Otherwise, the thesis goes forward to oral defense. See the Queen's School of Graduate Studies Calendar "General Regulations" section for further details.

At the opening of the oral defense, the student provides a brief presentation (approximately 20 minutes), followed by the formal examination. Questions are asked, in turn, by the examination committee, beginning with the External examiner. Exams will normally take about two hours. At the close of the examination, the candidate leaves the room and the Examination Committee votes on one of three outcomes:

Passed – a thesis is passed if it is acceptable in its present form or pending minor revisions. This means that no substantive changes are required.

Referred – a thesis is referred if it is not acceptable in its present form, but could be acceptable pending major revisions. A thesis is referred if it requires changes such as rewriting a chapter, reinterpreting data, correction to calculations or additional research in order to attend acceptable standards of coherence and scholarship. A re-examination of the thesis may be required.

Failed – A thesis is failed if it is unacceptable to the discipline even with major modifications. If the committee returns two or more votes showing failure, the committee will advise the student that they will be required to withdraw on academic grounds.

Student Progress

Student progress is reviewed once per year by the PhD Program Committee. The student is required to submit an annual progress report in June (**form is provided in Appendix 5**). This report describes the student's achievements to date, their academic goals for the next year, what supports need to be in place to accomplish these goals, and whether there have been unanticipated delays. Continuing and satisfactory progress is required to be in 'good standing'. Reports must be discussed with the supervisor(s) prior to submission and there is space in the report for the supervisor's assessment. Reports are submitted to the graduate assistant at epid@queensu.ca and copied to the supervisor(s). Tips for completing the annual report are provided on the School of Graduate Studies website: <http://www.queensu.ca/sgs/>

Student progress is deemed satisfactory if the student: 1) passes all courses; 2) passes the comprehensive exam and 3) meets thesis milestones. Unsatisfactory progress will be reviewed by the PhD Program Committee and recommendation for withdrawal of the student may be made to the GEC after two unsatisfactory reports. If a report is not submitted it will be deemed to have been negative. The program will closely monitor student progress to ensure a four-year completion time. Students have access to all the regular appeal processes through the School of Graduate Studies and Research.

In general, when problems occur, students are encouraged to approach their Supervisor first. If the student feels that this is not possible or appropriate, then they are encouraged to discuss issues with the PhD Program Director. Further advice is available in the School of Graduate Studies Graduate Student Handbook available at: <http://www.queensu.ca/sgs/> and in the Faculty of Health Sciences Graduate Council manual: <https://www.queensu.ca/sgs/faculty-staff/governance/graduate-councils> Supervisors are also encouraged to approach the PhD Program Director when they think a student is having difficulty, if they perceive a student is not progressing through the major milestones at an appropriate pace, or if they wish a collegial

forum for discussion and advice. The purpose of this review is to act early to identify and document the problem(s), brainstorm solutions, and set out a plan of action.

Students and supervisors are free to approach the PhD Program Director at any time. In situations of some urgency, special meetings of the PhD Program Committee are convened. The PhD Program Director may also ask a Supervisor to present a student's situation to the PhD Program Committee if they appear to be having difficulty (for example, in coursework). In these cases, the presentation serves to identify whether or not a problem exists, the extent to which the Supervisor is aware of the problem, and to develop an action plan if warranted.

Student Wellness Services

Queen's School of Graduate Studies Student Wellness Services provides a welcoming, confidential and integrated service that is responsive to the needs of students be it health services, counselling services, disability services or advice on maintaining or improving your overall well-being. For a full listing of services visit: <http://www.queensu.ca/studentwellness/> and <https://www.queensu.ca/sgs/sgs-habitat/staying-well>

Additional Academic Policies

Students are expected to be aware of and adhere to Queen's academic integrity policies. See <https://www.queensu.ca/sgs/graduate-calendar/general-regulations> for further information on these and other academic policies.

Academic Integrity

Academic integrity is constituted by five core fundamental values: honesty, trust, fairness, respect and responsibility. Queen's students, faculty, administrators and staff all have responsibilities to support and uphold the fundamental values of academic integrity.

All registered graduate students should be aware of the seriousness of academic dishonesty in a graduate setting and the possibility of expulsion from the program for any of the listed offenses. Submitting any written work (either in draft or final form) in whole or in part that is authored by someone else, or using direct quotations or large sections of paraphrased material in a project, research report, thesis, or other scholarly publication without appropriate acknowledgment is considered academic dishonesty. An expanded discussion, including definitions of academic dishonesty and plagiarism and sanctions imposed is found on the School of Graduate Studies policy site (above).

Students are encouraged to consult their course instructors regarding appropriate use of materials if in doubt about how their use may relate to academic dishonesty. If a course instructor, teaching assistant or supervisor identifies a case of academic dishonesty, the steps outlined below will be followed. There will be no exceptions to the policy.

Appeal of an Assigned Grade in a Graduate Course

Any student wishing clarification about, or who is dissatisfied with, an assigned grade in a graduate course should first discuss the matter with the course instructor, who will review the work in question. This discussion should take place within 14 days of the grades being available. If the instructor agrees to change a grade, a change of grade form shall be processed in the usual way.

If the instructor confirms the original grade, and if the student is still dissatisfied, then the student should appeal to the Department Head or Graduate Coordinator in the department, stating clearly the grounds on which the grade should be raised. If the Head or Graduate Coordinator believes the grounds to be reasonable, then the Head or Graduate Coordinator should initiate a review of the grade.

If the Head or Graduate Coordinator does not agree to a review of the grade, then the student has the right to formally request a review of the grade through the Dean of the School of Graduate Studies. The Dean will forward the request to the Head or Graduate Coordinator in the department, who will conduct a review of the grade.

The grade determined by means of the review shall be recorded as the final official grade, irrespective of whether it is identical to, or higher or lower than, the original grade. The Head or Graduate Coordinator will inform all parties, including the Dean of the School of Graduate Studies, of the result of the review.

Further appeal of an assigned grade can be made only on the basis of a specific procedural error or errors made in the departmental grade review procedures. This would be done through convening the Academic Appeal Board of the School of Graduate Studies.

Course Failure

If a student fails a required course, Queen's University states that the Head of the Department recommend one of the following:

1. Repeat the examination within one year after the original examination
2. Repeat the course
3. Take a substitute course
4. Withdraw from the program

Other School of Graduate Studies policies can be found at: <https://www.queensu.ca/sgs/graduate-calendar/general-regulations> and at: <https://www.queensu.ca/sgs/graduate-calendar>

Accommodation of Graduate Students with Disabilities

Queen's University is committed to providing accommodation for graduate students with disabilities. University administrators, faculty, staff and other students are expected to support, to the point of undue hardship, all reasonable individualized and appropriate accommodation plans that preserve the program's academic standards and adhere to the principles of academic integrity. For the policy click the following link: <https://www.queensu.ca/sgs/graduate-calendar/admission-and-registration>

Conflict of Interest

If a member of the faculty has a close relationship with a student (family or close friendship) and is required to teach that student, the faculty member will provide detailed answer keys/instructions for all tests and assignments to another faculty member so that they may mark that student's work. Said faculty member will also recuse themselves from membership on the comprehensive exam committee for that student.

Guidelines to Intellectual Property

These guidelines are intended to support your study and research at Queen's and to provide you with a general overview of what intellectual property is, what you should know, and how to find out more. You will find practical guidance about issues associated with intellectual property (IP) including patents, copyright and ownership of IP on the School of Graduate Studies website: <http://www.queensu.ca/sgs>

Opportunities for Student Involvement in the Department

Students play an important role in the administrative life of the Department and are represented on key Departmental Committees. Each year students choose representatives for:

- Public Health Sciences Student Association (PHSSA)
The PHSSA fosters experiences that support students on their path to becoming successful researchers and practitioners. PHSSA members organize activities that build student community and connect students to alumni and professional associations. <http://queensu.ca/phssa/>
- Departmental Committee
This Committee provides a broad forum for communication and discussion for all members of the department. One student from each cohort will be elected by their peers to bring forward questions, comments, concerns and suggestions of the class at monthly departmental meetings.
- Graduate Education Committee
The Graduate Education Committee (GEC) advises the Graduate Coordinator on matters pertaining to the administration of Graduate Programs, ranging from participation in admissions, assessment of scholarship and funding applications, review of student progress, strategic planning, participation in internal and external program reviews, and development of program policies and procedures. Elected program student representatives sit on this committee. Students participate in all discussions, except those on individual student progress.
- Sub-Committees, Special Committees and Task-Forces
From time to time students will be asked to sit on sub-committees, special committees and task forces struck in response to specific policy or procedural issues.
- Student Business Meetings
Student representatives will arrange regular meetings of the student body to provide a forum for general communication and discuss matters of departmental business. All full-time and part-time students are encouraged to attend.

Workspace, Equipment and Facilities

It is the responsibility of the primary supervisor to request and/or allocate each full-time doctoral student his or her own work-space and computer. These are usually located in the research environment of the supervisor. Students have access to a variety of software applications either through Queen's software licenses or through the supervisor's purchased software (SAS, SPSS, STATA, NVivo, Endnote, Epi-Info etc). Many licenses for the most common data management and analysis software are provide for Queen's students or can be purchased at reduced student costs.

Students are provided with a computing account that affords them access to Queen's server and network for e-mail, internet, library, and archival resources. Some of the department's affiliated research groups are linked to the Queen's network through Kingston General Hospital or other computing networks.

Queen's Information Technology Services maintains a number of computing sites on campus. Students can use computers in these sites for e-mail, internet, or to run certain site-licensed software. The Department provides computer lab sessions on SAS programming corresponding to biostatistics teaching in one of these computing labs located at Jeffrey Hall. Students working on geographic analyses also have access to the Geographic Information Systems computing laboratory through the Department of Geography.

Bracken Library also has a Centre for Health Education Electronic Resources (CHEER) which provides students with access to over 100 workstations.

The main offices for the Department of Public Health Sciences are located at Carruthers Hall at 62 Fifth Field Company Lane.



The following equipment and facilities are available for student use in Carruthers Hall:

- **Kitchen:** A small kitchen, equipped with a microwave and sink, is available for student use.
- **Desk Space:** Shared areas are available to all students on the 3rd floor of Carruthers Hall.
- **Computers:** Students are required to have their own computers. In order to facilitate group work and allow for students to access desk space in the common rooms, laptops are ideal. Two communal computers are available for use, one in the student common room and one in the lounge. These computers are equipped with internet access, word processing, SAS and SPSS software.
- **Email:** All Public Health Sciences students are required to obtain a Queen's student e-mail account. The computer help desk phone number is: 613-533-6666
- **Wireless internet:** Carruthers Hall is equipped for wireless communication so that students may check their emails and work on the web from their workstations, classroom, and common room.
- **Photocopier:** A photocopier machine is located in the student common room. All students will be provided with a photocopy code which is required in order to use the machine.
- **Keys:** Keys for Carruthers Hall and student rooms are available from the Graduate Assistant. A \$20 cash deposit is required, to be returned when keys are handed in.
- **Fax:** Students may fax material using the photocopier located in the student common room in Carruthers Hall on the 3rd floor.

Professional Skills Development for Graduate Students

Expanding Horizons

The School of Graduate Studies, in partnership with student service providers at Queen's, offers Expanding Horizons - a series of workshops and seminars to support the academic, personal, and professional success of graduate students. Graduate students are encouraged to participate according to their needs and interests, and may attend as many workshops/seminars as desired. <http://www.queensu.ca/sgs>

Career Services

Career Services provides career education and employment support services at Queen's for undergraduate and graduate students in all disciplines. A comprehensive range of services are offered including drop-in

career advising, supporting graduate students in making informed decisions about career options, job search strategies, and CVs/resumes. For a full description of services see: <http://careers.queensu.ca/>

Centre for Teaching and Learning

The Queen's Centre for Teaching and Learning (CTL) offers a wide array of programs and services that are designed to meet the teaching and learning needs of students, post-doctoral fellows, staff, and faculty members. For a full description of programs, services and supports, see: <http://www.queensu.ca/ctl/>

Dissertation Boot Camp

The School of Graduate studies hosts two Dissertation Boot Camp events throughout the year. The primary aim of the 5-day Boot Camp is to write and to make substantial headway on your thesis. Advice and tips about writing, one-on-one consultation and snacks and lunch are provided. For details and how to register go to: <http://www.queensu.ca/sgs/dissertation-bootcamp>

Three Minute Thesis (3MT)

The 3MT is a university wide competition for Master's students (thesis or research project) and doctoral students in which participants present their research and its wider impact in 3 minutes or less to a panel of non-specialist judges. This is an excellent opportunity to develop strong communication skills and convey the significance of your research work. <http://www.queensu.ca/3mt/home>

Student Academic Success Services

These services include thesis writing support in small groups covering topics of interest to the participants, learning strategies for graduate students, and through the writing centre graduate students can get assistance with academic writing and one-on-one consultations. SASS works with students in all disciplines and provide specialized support for English language learners: <http://sass.queensu.ca/>

Tips & Resources Webpage

Queen's School of Graduate Studies have many valuable resources and events in place to assist you in progressing toward degree completion. Take advantage of the many services available to you during your time at Queen's. <http://www.queensu.ca/sgs/>

Queen's University International Centre (QUIC)

QUIC is a support service for all members of the Queen's Community and through its activities promotes an internally informed and cross-culturally sensitive learning environment. The centre offers support for international students in finding housing, it provides a relaxing and welcoming space for conversation, and provides information about study permits, visas, health insurance coverage, taxes and living in Kingston. Visit : <http://quic.queensu.ca/>

Queen's Libraries

Students can access library materials on-site or via the internet with a Queen's netID. In addition, students can book study and meeting space, borrow materials from other libraries, seek advice on searching for the information you need, and access information about copyright, open access and scholarly communications. On the third floor of Stauffer Library, the Helen Howard Reading Room is a dedicated space for graduate students. It holds two breakout rooms equipped with televisions, and a lounge area in the front. <https://library.queensu.ca/help-services/services-graduate-students>

Handbook for International Students

This handbook provides valuable information and resources that will help students find what they need upon arrival and throughout their stay in Kingston. Sections include student services, academic life,

housing, money matter, cross-cultural transition, and community and recreation.

<https://www.queensu.ca/sgs/prospective-students/international-students>

Student Wellness Services

Student Wellness Services provides a welcoming, confidential and integrated service that is responsive to the needs of students be it health services, counselling services, disability services or advice on maintaining or improving your overall well-being. For a full listing of services visit:

<http://www.queensu.ca/studentwellness/home> and <https://www.queensu.ca/sgs/sgs-habitat/staying-well>

Health Services

Student Health Service provides Queen's students with quality, comprehensive health care in a convenient campus location. Student Health Service provides confidential, student-centered health care, including comprehensive medical care, travel medicine and education, immunization and referrals for specialized treatment. The multidisciplinary health team includes family physicians, psychiatrists, registered nurses and support staff. Appointments are available for students, provided they have not opted out of the health coverage provided by the university.

Appointments can be scheduled by calling 613-533-2506 and are available at the following times:

Monday - 9:00 am to 4:30 pm

Tuesday - 9:00 am to 7:30 pm

Wednesday - 9:00 am to 4:30 pm

Thursday - 9:00 am to 7:30 pm

Friday - 9:00 am to 3:00 pm

Counselling Services

Counselling Services supports the personal, academic and social development of students at Queen's University by providing a range of programs and services appropriate to student needs. Some reasons why students seek counseling:

- Abuse and assault issues
- Academic engagement or direction
- Substance use
- Anxiety and mood problems
- Coping with grief or loss
- Relationships
- Eating/body image difficulties
- Self-harm
- Homesickness/loneliness
- Self-confidence and self-esteem issues
- Sexuality and sexual orientation
- Stress
- Transition to university
- Social functioning
- Dealing with racism

Students are urged to seek guidance and assistance before the issue escalates and becomes more difficult to handle.

To make a counseling appointment, call 613-533-6000 ext. 78264. Appointment times fall within 9:00 am – 4:30 pm Monday through Friday. The School of Graduate Studies has two embedded counsellors (see

below). More information on counselling services, including urgent help, are here:

<http://www.queensu.ca/studentwellness/counselling-services>

Accessibility Services

With other members of the Queen's community, Accessibility Services works to ensure the university and its programs are accessible to students with disabilities. Supports and services include:

- Transition programming specially designed for students with disabilities
- Initial assessments to determine eligibility for services and academic accommodations
- Individualized accommodation planning
- Referrals to on and off-campus services and supports
- Coaching in self-advocacy to promote autonomy and independence
- Counseling support related to one's disability, self-concept, disclosure, and self-advocacy
- Advice to students, faculty, and staff on disability, accessibility, and accommodation matters
- Education and awareness training to the Queen's community

Students seeking academic accommodations for reasons of a disability or health condition at Queen's University are required to provide documentation from a qualified health care or other professional verifying the presence their disability or health condition. Individual accommodation plans may include:

- Special examination arrangements
- Use of computers for exams and an adaptive technology lab and equipment loan
- Special classroom arrangements
- Alternate formats for course material

The following link has helpful information for students about how to register with the Accessibility Services office, required documentation, consent and confidentiality policies etc:

<http://www.queensu.ca/studentwellness/accessibility-services/students>. Accessibility Services can be reached by email at accessibility.services@queensu.ca, by phone at 613-533-6467.

School of Graduate Studies on-site Counsellor

As part of Student Wellness Services, the School of Graduate Studies has an on-site Counsellor who provides an additional access point for graduate students to counselling services. Located in the School of Graduate Studies, graduate students have access to individual counselling services, group programs and various health and wellness events. Strict standards of confidentiality or upheld. Visit:

<https://www.queensu.ca/sgs/sgs-habitat/staying-well>

Peer Advising (Society for Graduate and Professional Students, SGPS)

The Student Advisor program provides advocacy and support for graduate and professional students. The program's primary goal is to assist SGPS members negotiate their many roles as students, researchers, teachers, employees and colleagues. Services are strictly confidential. <https://sgps.ca/>

Academic Counselling, Confidential Advising

The Associate Deans in the School of Graduate Studies are available to graduate students who wish to talk about any academic issue they have. The Associate Deans will offer advice and lay out options to manage the specific issues. These meetings are in confidence and actions are only taken with the student's consent. To make an appointment please contact the Administrative Assistant at: sgsasst@queensu.ca

Athletics and Recreation Centre

The Athletic and Recreation Centre – also known as “The ARC” - is a hub of activity on campus. This facility offers a number of opportunities for students to contribute to and enhance or maintain their health. The ARC provides students, faculty, staff and community members with a selection of eating establishments, a student run café, a small market stocked with fresh produce and meat and a prescription dispensing, fully supplied pharmacy. All of these amenities are situated alongside the 24,500 square feet of cardiovascular and strength-training space, pool, racquet courts, gymnasiums, exercise, dance and spin studios and combative rooms. More information on facility options, programming, and hours of operation can be found at: <https://rec.gogaelsgo.com/index.aspx>

List of Appendices

1. Degree Learning Expectations
2. Concepts, Competencies and Activities that can be covered in a PhD Specialization in Epidemiology
3. Thesis Proposal Defense Scheduling Form
4. Thesis Defense Scheduling Form
5. Progress Report Form

Appendix 1: Degree Learning Expectations

These degree learning expectations were approved by the Queen’s Senate in May of 2018. They can be used by the student and their supervisor as a guide to developing the student’s personalized study plan and as a touchstone throughout the degree to assess student progress.

Mapping curriculum and degree level expectations (DLEs)

The following describes the DLEs for the Queen’s Department of Public Health Sciences PhD program. All students must meet the expectations listed in regular font. *Additional field-specific expectations are listed in italics.*

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
<i>Depth and breadth of knowledge</i>	<p>Understanding and mastery of basic through advanced biostatistics methods and concepts, as applied to public health</p> <p><i>Epidemiology Field: Advanced biostatistics including matched analyses, clustering, survival analysis, regression models for different types of outcome data, selected advanced analytical topics</i></p> <p><i>Biostatistics Field: Advanced biostatistics including advanced statistical models, estimation methods, and data analysis skills for different types of outcome data</i></p> <p>Understanding and mastery of basic through advanced methods of public health study designs that can include experimental and observational quantitative designs, qualitative methodologies, program planning and intervention studies, health economics, health services research and community-based participatory research</p> <p><i>Epidemiology Field: Understanding and mastery of hybrid and advanced study designs to describe health problems and phenomena and of investigations of causal and/or prognostic factors (personal, social or environmental), intervention evaluations and the study of outcomes of treatment / interventions</i></p> <p><i>Biostatistics Field: Understanding statistical issues in experimental and observational studies and mastery of basic statistical methods for causal inference, high-</i></p>	<p>EPID 902 Public Health Research (required for all PhD students)</p> <p>EPID 901 Advanced Epidemiology (required for Epidemiology field, elective for other PhD students)</p> <p>EPID 822 Applied Regression Analysis (required for Epidemiology and Biostatistics fields, elective for other PhD students)</p> <p>EPID 823 Advanced Methods in Biostatistics (required for Epidemiology and Biostatistics fields, elective for other PhD students)</p> <p>Plus course electives advised by supervisory committee. These include but are not limited to the electives listed under the Biostatistics Field above and: EPID 803 Public Health & Policy in the Canadian Health System EPID807 Health Economics EPID 810 Controlled Clinical Trials EPID 815 Independent Study EPID817 Foundations of Cancer Control EPID828 Infectious Diseases</p>	<p>Successful completion of course assignments, quizzes, projects and examinations</p> <p><i>Epidemiology Field: Successful completion of EPID 823 Advanced Methods in Biostatistics and EPID 901 Advanced Epidemiology</i></p> <p><i>Biostatistics Field: Successful completion of core courses and statistical course electives</i></p> <p>Demonstration of mastery of core concepts during the comprehensive examination, the writing and presentation of the PhD thesis outline and proposal and conduct of the thesis. This can include acceptance of quantitative manuscripts in peer reviewed journals associated with the thesis</p> <p>Further demonstration of this mastery in teaching opportunities (lectures, seminars, teaching assistantship), written and oral scientific communications and associated knowledge translation activities</p>	<p>Health knowledge creation Critical appraisal Data processing and analysis Project management Scientific writing and oral communication Health research leadership Knowledge translation Program implementation Program evaluation Community engagement Transdisciplinary team management and/or involvement Literature searching, review and synthesis</p>

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
	<p><i>dimensional and administrative data analysis, clinical trial analysis, and/or genomic data analysis</i></p> <p>Understanding and mastery of concepts surrounding the design of public health studies such as bias identification, precision, statistical vs public health/clinical significance, effect modification, external validity, relevant theoretical frameworks</p> <p><i>Epidemiology Field: Understanding of matched vs unmatched designs; mediation, models of disease causation; conceptual and theoretical frameworks applied to the design of epidemiological studies. Understanding of the role and appropriate application of non-epidemiological designs, to complement traditional epidemiological methods</i></p> <p><i>Biostatistics Field: Understanding and mastery of basic statistical theory and methods for precision, significance, and validity assessment, such as simulation-based methods and development of basic statistical knowledge to assess validity and assumptions of statistical models and methods</i></p> <p>Detailed and comprehensive knowledge of content as well as the specialized methods used within the thesis specialty area</p> <p><i>Epidemiology Field: Includes core mastery of the substantive epidemiology of topic area for thesis; theoretical frameworks that underlie analyses in this field; as well as specialized statistical and non-statistical methods that support the thesis in this field</i></p> <p><i>Biostatistics Field: Development of enough knowledge in a specific subject domain for thesis within epidemiology and public health and understanding of issues in this field that require statistical support</i></p>	<p>EPID829 Global Health EPID831 Chronic Disease Epidemiology EPID832 Mental Health Critical Enquiry EPID833 Issues in Military and Veterans Health Research EPID835 Environmental Public Health EPID 837 Health Services Research</p> <p>Thesis, including outline, protocol, and final dissertation</p> <p>Regular participation in departmental seminar series and thesis proposals and defenses</p>	<p>Demonstrated mastery of substantive areas of interest in the comprehensive exam, as well as the written thesis protocol, the final thesis document and the oral defense of these documents</p>	
<i>Research and scholarship</i>	<p>Ability to critically read and appraise the observational health research literature, based upon an understanding of core descriptive, analytic and experimental designs</p>	<p>Coursework as described above</p> <p>Thesis, including outline, protocol, proposal and final dissertation</p>	<p>Demonstrated ability to conduct peer review of scientific manuscripts</p>	<p>Health knowledge creation Critical appraisal Data processing and analysis Project management</p>

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
	<p>Capability to define and refine public health research questions and hypotheses</p> <p>Capability to develop suitable statistical models for public health research analyses</p> <p>Use of appropriate techniques in data collection and associated field methods</p> <p>Use of appropriate techniques and software for data management</p> <p>Use of appropriate technique and software for public health research analyses</p> <p>Competency in oral and written presentations for peer review scientific audiences and for lay audiences when appropriate</p> <p>Competency in grant proposal construction for a peer review scientific audience</p> <p>Competency in principles underlying the conduct of research involving human subjects</p> <p>Competency in peer review of scientific grants, manuscripts and other public health research products</p> <p>Competency in design and conduct of an advanced research project using public health research methods</p> <p><i>Epidemiology Field: Above competencies focused within but not limited to the epidemiologic realm</i></p> <p><i>Biostatistics Field: Competency in identifying the limitations of existing statistical methodology, and using advanced theory and computation to adapt existing methodology or to develop new methodology for addressing research problems in epidemiological and public health settings</i></p>	<p>Regular participation in departmental seminar series, and thesis proposals and defenses</p> <p>SGS 804 Certification in ethics for research involving human subjects (School of Graduate Studies online course)</p>	<p>Demonstrated ability to appraise the merits and weaknesses of literature related to the core thesis topic</p> <p>Development of scientific protocols for courses, granting agencies and the PhD thesis</p> <p>Completion of course components devoted to computerized data management and analysis, sampling, data abstraction, and data collection, results interpretation and bias assessment</p> <p>Successful completion of comprehensive exam</p> <p>Successful completion of the thesis outline, proposal and final dissertation including: oral defense of proposal and dissertation, all data management and analysis tasks, project design and management, results interpretation and conclusions. May involve submission of grant(s) and scientific manuscripts to peer review agencies and journals.</p> <p>Participation in internal and external scientific presentations</p> <p>Successful completion of human subjects (ethics) training required of all graduate students</p> <p>Consideration of ethical principles in the thesis proposal and final dissertation</p>	<p>Scientific writing and oral communication</p> <p>Health research leadership</p> <p>Knowledge translation</p> <p>Program implementation</p> <p>Program evaluation</p> <p>Community engagement</p> <p>Transdisciplinary team management and/or involvement</p> <p>Literature searching, review and synthesis</p>

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
<p><i>Application of knowledge</i></p>	<p>The ability to apply appropriate study designs for descriptive, analytical, quantitative and/or qualitative studies</p> <p>Application of basic through advanced biostatistical methods and other analytic methods as befits thesis topic</p> <p>Examine the appropriateness of underlying analytical assumptions taking corrective actions where indicated and interpreting results in relation to the objectives of the analysis</p> <p>Calculate sample size or power for a given study design involving one or two more groups</p> <p>Advanced skills using statistical packages, including importing/exporting data, selecting appropriate forms of analysis, performing analysis and interpreting the output in order to demonstrate the other learning outcomes</p> <p>The ability to calculate descriptive and comparative measures including: measures of disease/outcome occurrence and other population health indicators, measures of association, measures of public health impact, and patterns of disease/outcome occurrence</p> <p>Also see above under learning outcomes</p> <p><i>Epidemiology Field: Knowledge application listed above specific to epidemiologic designs. This includes the ability to age-adjust incidence, mortality and morbidity rates; to assess test validity (sensitivity, specificity, positive predictive value, likelihood ratio etc.); to statistically compare two or more groups (independent or matched) where the measurements are categorical, ordinal, continuous, or censored survival data and examine the effects of one or more explanatory variables on a categorical, discrete, continuous or censored dependent variable through the use of appropriate statistical modelling approaches.</i></p> <p><i>Biostatistics Field: Ability to read, understand and use the most recent literature in epidemiology, public health, and</i></p>	<p>Coursework as described above</p> <p>Thesis, including outline, protocol, proposal and final dissertation</p> <p>Regular participation in departmental seminar series, and thesis proposals and defenses</p>	<p>Course assignments and exams, as applicable</p> <p>Successful completion of the comprehensive exam</p> <p>Demonstrated mastery of concepts in the thesis protocol/proposal and final dissertation</p>	<p>Health knowledge creation</p> <p>Critical appraisal</p> <p>Data processing and analysis</p> <p>Project management</p> <p>Scientific writing and oral communication</p> <p>Health research leadership</p> <p>Knowledge translation</p> <p>Program implementation</p> <p>Program evaluation</p> <p>Community engagement</p> <p>Transdisciplinary team management and/or involvement</p> <p>Literature searching, review and synthesis</p>

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
	<i>other biomedical settings relevant to an analytic task, to formulate a plan for data gathering, data management and statistical analysis, and to carry out plan effectively to answer questions of substantive interest in epidemiology, public health, and other biomedical settings</i>			
<i>Communication skills</i>	<p>The ability to communicate public health concepts, issues, theories and methods</p> <p>The ability to translate and disseminate public health knowledge to health policy makers and lay audiences</p> <p>Scientific writing, oral and graphic presentation skills</p> <p><i>Biostatistics Field: The ability to learn a substantive application rapidly by listening effectively to the subject matter specialist and asking pertinent questions as needed, and ability to integrate statistical concepts into presentations for public health and epidemiology audiences in forms that they will find useful and intelligible</i></p>	<p>Coursework as described above</p> <p>Thesis, including outline, protocol and final dissertation</p> <p>Regular participation in departmental seminar series, and thesis proposals and defenses</p> <p>Participation in grant proposal writing</p> <p>Participation in teaching</p>	<p>Successful completion of core and elective courses with presentation opportunities and modules/classes in knowledge translation</p> <p>Development of a plan for knowledge transfer and dissemination as part of the PhD thesis (as applicable)</p> <p>Successful completion of comprehensive exam, proposal and dissertation defense.</p> <p>Successful completion of teaching/teaching assistance duties</p>	<p>Ability to communicate to a wide range of audiences</p> <p>Ability to communicate public health concepts, problems and solutions</p> <p>Scientific writing and oral communication</p> <p>Knowledge translation</p> <p>Familiar with grant proposal writing</p>
<i>Autonomy and professional capacity</i>	<p>Teaching skills through seminar, class and other presentations and teaching assistantships</p> <p>Mentoring skills through collaboration with other students and research project personnel</p> <p>Awareness of ethics in research</p> <p>Ability to disseminate research findings through publications in credible scholarly journals and to health policy makers and the public through knowledge translation approaches when appropriate</p> <p>Ability to facilitate group/team work and operate effectively as a member of a group or team</p> <p>Elicit problems and issues, frame problems in scientific terms, advise on appropriate research methods, advise on methods of data collection and analysis (including statistical analyses), interpret findings</p> <p>Decision-making skills</p>	<p>Coursework as described above</p> <p>Thesis, including outline, protocol, proposal and final dissertation</p> <p>Regular participation in departmental seminar series, and thesis proposals and defenses</p> <p>Participation in teaching</p>	<p>Meeting the course requirements for core and elective courses</p> <p>Participation in department seminars</p> <p>TA evaluation reports (where applicable)</p> <p>Evaluation from thesis supervisors and course instructors</p> <p>Ethics approval obtained for thesis</p> <p>Certification of ethics training from School of Graduate Studies</p> <p>Manuscripts submitted for publication as part of a manuscript-based thesis (as applicable)</p> <p>Successful completion of core and elective courses requiring group work</p>	<p>Project conceptualization</p> <p>Acquiring project funding</p> <p>Project management</p> <p>Scientific writing and oral communication</p> <p>Critical appraisal</p> <p>Health research leadership</p> <p>Provision of expert advice</p> <p>Knowledge translation</p> <p>Program implementation</p> <p>Program evaluation</p> <p>Community engagement</p> <p>Transdisciplinary team management and/or involvement</p>

DLE	Learning Outcomes	Relevant Courses, Academic Requirement	Indicators of Achievement	Transferable Skills
	(through analytical, critical thinking and problem-solving)		<p>Ongoing participation in research laboratory (or equivalent) for thesis-based research (as applicable)</p> <p>Successful completion of teaching/teaching assistance duties</p>	
<i>Awareness of Limits of knowledge</i>	<p>Critical appraisal</p> <p>Literature synthesis</p> <p>Bias and validity assessment</p>	<p>Coursework as described above</p> <p>Thesis, including outline, protocol and final dissertation</p> <p>Regular participation in departmental seminar series, and thesis proposals and defenses</p>	<p>Participation in critical appraisal exercises in coursework, journal clubs, through conduct of the thesis</p> <p>Successful completion of the comprehensive exam</p> <p>Synthesis, bias and validity assessment of thesis-related literature</p>	<p>Critical appraisal</p> <p>Health research leadership</p> <p>Provision of expert advice</p> <p>Knowledge translation</p>

Appendix 2: Concepts, Competencies and Activities that can be covered in a PhD Specialization in Epidemiology

Epidemiology is one of the sciences underlying and supporting public health, and it is a broad and exciting field that “provides logic and structure to the analysis of health problems” (p. 2, Webb and Bain Essential Epidemiology). Rothman defines Epidemiology as: *the study of the distribution of health-related states and events in populations... Other sciences, such as clinical medicine, are also directed toward the study of health and disease, but in epidemiology the focus is on population distributions.*” (Rothman 3rd ed. p. 32) As such, epidemiologic studies contribute evidence for the design of prevention programs, clinical practice, legislation, and public health interventions aimed at improving the health of the community. This document attempts to describe epidemiologic research areas that fall within the three main research areas encompassed by our Epidemiology field option: population health, health services and policy, and clinical epidemiology. Many of these methods are used by other health research disciplines as well.

A PhD with a specialization in epidemiology includes the study of design and measurement principles, analytic methods and critical interpretation of epidemiologic studies as evidence for public health issues. Focus on measurement and the design elements that contribute to rigorous internal validity of research on human health issues are key features of a dissertation. Epidemiologic methods can be applied to all substantive health problems. Other approaches can complement epidemiology, or inform the epidemiologic approach.

This list attempts to describe the scope of epidemiologic endeavours. We recognize that health research information from cellular and animal studies, case reports, qualitative studies, non-systematic scoping reviews, needs and gap analyses can inform the epidemiologic research agenda and its conceptual frameworks. But these approaches in and of themselves do not constitute epidemiologic research.

A. Health Problem

- a. Descriptive epidemiology
 - i. Disease definition
 1. Disease classification systems
 - ii. Disease frequency, morbidity and mortality
 - iii. Disease risk factors
 1. Relative risk
 2. Population attributable risk
 - iv. Global, cultural and social context of health problems
- b. Disease surveillance
 - i. Types of surveillance systems and approaches (e.g., acute disease surveillance versus chronic disease surveillance)
 - ii. Existing data sources local, national, international
 - iii. Rate standardization for comparisons across person, place, time
 - iv. Etiologic studies
- c. Healthcare surveillance approaches
 - i. Process evaluations for quality, accessibility, continuity, efficiency, acceptability
 - ii. Benchmarking

- iii. Small area variation studies

B. Current Knowledge

- a. Systematic literature review
- b. Critical appraisal
 - i. Study validity
 - ii. Precision
 - iii. Significance
- c. Meta-analysis
 - i. Cochrane Collaboration
- d. Causal inference
- e. Identify meaningful gaps

C. Study objectives and hypotheses

- a. Conceptual frameworks / disease models
 - i. Pathophysiologic disease mechanisms
 - ii. Socio-behavioural mechanisms
 - iii. Community program / system level mechanisms
 - iv. Natural history of disease
 - v. Prognosis
 - vi. Access and/or quality of care models
- b. Hypothesis or research problem identification

D. Study design and conduct

- a. Design options (including advantages, strengths, limitations)
 - i. clinical and population case series
 - ii. cohort
 - iii. case-control
 - iv. cross-sectional
 - v. measurement studies
 - vi. variations on traditional designs (e.g., case-cohort, case-only)
 - vii. designs adopted from other disciplines (e.g., mixed methods, instrumental variables design)
- b. Data sources
 - i. Primary sources
 - ii. Secondary sources
- c. Study population
 - i. Identification
 - 1. Sample size estimation, detectable effect, study power
 - 2. Sampling methods
 - ii. Recruitment
 - iii. Follow-up

- d. Issues and choices in study conduct
 - i. Influence of cultural / social context on study design and conduct
 - ii. Data collection / capture (face-to-face, telephone, mail, internet, other)
 - iii. Variable selection and definitions
 - iv. Questionnaire / data collection instrument design / data processing
 - v. Measurement quality
 - 1. Quality control strategies
 - 2. Assess for measurement error
 - 3. Correct for measurement error if possible

- e. Research ethics
 - i. Confidentiality
 - ii. Informed consent
 - iii. Issues in special populations
 - iv. Data privacy and protection

- f. Analyses
 - i. Descriptive - univariate
 - ii. Bivariate
 - 1. Categorical
 - 2. Continuous
 - 3. Survival
 - 4. Longitudinal
 - iii. Hypothesis testing
 - iv. Assess for presence and/or control of confounding and effect modification
 - 1. Stratified analyses
 - 2. Multivariable regression
 - 3. Comparative effectiveness / outcomes research
 - a. Pragmatic trials
 - b. Instrumental variables / natural experiments
 - c. Propensity scores
 - v. Predictive / prognostic modelling
 - 1. Variable choice and transformations
 - 2. Missing data imputations
 - 3. Calibration and discrimination
 - 4. Shrinkage for optimism in the estimates
 - 5. External validity
 - vi. Measurement development and validation
 - 1. Factor analysis and other item reduction strategies
 - 2. Reliability assessment
 - 3. Internal validation
 - 4. External validation

- vii. Advanced methods and methods (e.g., hierarchical regression, time dependent and longitudinal analyses, structural equation modelling)
- g. Interpretation of effect estimates
 - i. Assess effect of possible biases, assess internal validity
 - ii. Interpret results
 - 1. Precision
 - 2. In relation to conceptual / causal framework
 - 3. In relation to clinical / public health significance
 - iii. Assess external validity
 - iv. Put in context of what else is known
 - v. Identify next steps

E. Knowledge dissemination and translation

- a. (consider) Integrated knowledge translation
- b. Oral and written scientific reports
- c. Plain language / accessible reports
- d. Relevance of research findings in relation to other knowledge and sociocultural norms
- e. (when appropriate) Advocate for action informed by research findings or influence subsequent research

F. Intervention research

- a. For primary prevention of disease or risk reduction
 - i. Community trials
- b. For secondary prevention - disease detection (screening)
 - i. Test characteristics (validity, reliability)
- c. For tertiary prevention - disease treatment
 - i. Randomized controlled trials
 - ii. Other comparative effectiveness designs
- d. For healthcare programs and service delivery
 - i. Program/service trials
 - ii. Technology assessment
 - iii. Community trials
 - iv. Quasi-experimental designs (pre-test/post-test, time series)
 - v. Epidemiologic designs (cohort, case-control, cross-sectional)
 - vi. Mixed methods

G. Specialization based on level of prevention

- a. Etiologic epidemiology
- b. Public health-related epidemiology
- c. Clinical epidemiology
- d. Health services research

H. Exposure-specific areas of specialization

- a. Environmental epidemiology
- b. Epidemiology in war and disasters
- c. Genetic epidemiology
- d. Molecular epidemiology
- e. Nutritional epidemiology
- f. Occupational epidemiology
- g. Social epidemiology

I. Disease-specific areas of specialization

- a. Cancer epidemiology
- b. Cardiovascular disease epidemiology
- c. Chronic respiratory disease epidemiology
- d. Infectious disease epidemiology
- e. Injury epidemiology
- f. Mental health epidemiology
- g. Perinatal epidemiology
- h. Reproductive epidemiology

NOTE: Epidemiologists often work in multidisciplinary teams that can include: biostatisticians, health care professionals, basic molecular and genetic scientists, health economists, medical geographers, kinesiologists, psychologists, sociologists and others.



**Appendix 3: PhD Proposal Defense Scheduling Form
Department of Public Health Sciences**

Student Name		
Student Number		
Thesis Title		
Supervisors		
Proposal Submission Date		
Presentation Date (Suggestion #1):	<input type="checkbox"/> am	<input type="checkbox"/> pm
Presentation Date (Suggestion #2):	<input type="checkbox"/> am	<input type="checkbox"/> pm
Presentation Date (Suggestion #3):	<input type="checkbox"/> am	<input type="checkbox"/> pm
Faculty Reviewer (Suggestion #1):		
Faculty Reviewer (Suggestion #2):		
Faculty Reviewer (Suggestion #3):		
Faculty Reviewer: (Suggestion #4):		
Faculty Reviewer: (Suggestion #5):		

Primary Supervisor(s) Signature _____

Student Signature _____

Program Director Signature _____



Appendix 4: PhD Thesis Defense Scheduling Form
Department of Public Health Sciences

Student Name:	
Student Number:	
Thesis Title:	
Supervisor(s):	
Confirmed Submission Date:	
Presentation Date (Suggestion #1):	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
Presentation Date (Suggestion #2):	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
Presentation Date: (Suggestion #3):	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
External Examiner* (Suggestion #1) + email:	
External Examiner* (Suggestion #2) + email:	
External Examiner* (Suggestion #3) + email:	
Internal/External Examiner*: (Suggestion #1):	
Internal/External Examiner*: (Suggestion #2):	
Internal/External Examiner*: (Suggestion #3):	
Internal Examiner*: (Suggestion #1):	
Internal Examiner*: (Suggestion #2):	
Internal Examiner*: (Suggestion #3):	

Primary Supervisor(s) Signature* _____

Student Signature* _____

Program Director _____

** By providing their signatures, the primary supervisor(s) and student attest that all examiner suggestions are at arm's length from the student and the thesis content so as not to be in conflict of interest with the student (examples include co-authorship with the student on manuscripts that form part of the thesis; a personal or family relationship with the student; vested interest in the thesis/research for personal/financial gain).*

Appendix 5: PhD Program Term Progress Report

Department of Public Health Sciences, Queen's University

This progress report is to be completed once per year in June. Once fully completed by the student and supervisor(s), please submit via email to epid@queensu.ca copying your primary supervisor. This method will stand in for signatures.

Student Name:

Student Number:

Year in Program:

Supervisor(s) Names:

Thesis Committee Membership:

Milestone completion dates or planned completion dates:

Comprehensive exam

Outline presentation

Thesis proposal presentation

Thesis submission

To be completed by the student:

Please describe your progress over the last year. Comment where applicable on progress in research, data collection, analysis and/or writing of dissertation. Please report on papers submitted or published, conferences, presentations, grant applications and/or professional development. Please indicate if there is anything that has hindered your progress over the last year.

Please outline your specific goals for the next year.

Respond, if you wish, to the evaluation given below.

To be completed by the supervisor(s) and/or committee members (teaching should not be evaluated in this report):

Comment on the student's progress in the last year.

Are the proposed goals for the next month reasonable and compatible with timely degree completion?

If delays or obstacles to progress have been reported, please comment on remedial action.

Date: _____