

Department of Mathematics Graduate Handbook

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1 Introduction

All graduate students are bound by Academic regulations and University policies, which can be found in the current graduate calendar at <http://www.brocku.ca/webcal/current/graduate/acad.html>.

Degree requirements for the M.Sc. degree are spelled out in the Mathematics section of the current graduate calendar

In addition to these, graduate students in Mathematics and Statistics are subject to departmental rules and regulations outlined below.

2 Duration and residency

Full-time candidates must complete all degree requirements within three years from the date of first registration.

Part-time candidates must complete all degree requirements within five years from the date of first registration.

The normal duration of the M. Sc. program is 24 months. However, completion in 12 months is possible in the Statistics concentration.

A part-time graduate student may register for no more than two half-credit courses (1 credit) in each academic term. Permission to change status from full-time to part-time, or vice versa, must be sought from the Department of Mathematics and approved by the Graduate Program Director and the Office of Graduate Studies. Students must complete a Request to Change Status form found at <https://brocku.ca/graduate-studies/student-resources/forms/>.

3 Courses

A list of graduate courses can be found in sec. 10 of the graduate calendar. Currently offered courses can be found in the current graduate timetable. Links to currently offered courses and course descriptions can be found at the web page of the graduate program at <https://brocku.ca/mathematics-science/mathematics/graduate-programs/>.

Students are requested to discuss course selection with their supervisor prior to registration. Final registration approval will be issued by the Graduate Program Director in consultation with the supervisor.

4 Supervisors And Supervisory Committees

- (a) Upon acceptance to the program, each student will be assigned a Supervisor.
- (b) By default, all graduate students are initially admitted to the Major Research Paper (MRP) stream. Students may switch to the thesis stream at

any time, subject to approval of the Supervisor and the Graduate Program Director.

- (c) For each student in the *MRP stream*, the supervisor in consultation with the student will propose the supervisory committee composition, which must comprise a minimum of two members, the supervisor and another faculty member.
- (d) For each student in the *thesis stream*, the supervisor in consultation with the student will propose the supervisory committee composition, which must comprise a minimum of three members, the supervisor and another two faculty members.
- (e) The names of members of the committee must be submitted to the Graduate Program Director for approval at the time of the first student progress report.
- (f) If either the graduate student or supervisor wishes to initiate a change in supervisor the request must be presented in writing, with explanation, to the Graduate Program Director, and approved by the Faculty Dean and the Dean of Graduate Studies.

Roles and responsibilities of supervisors and supervisory committees are described in detail in sec. 9.1 of the Faculty Handbook, https://brocku.ca/university-secretariat/faculty-handbook/section-3/#9._Graduate_Supervision,_Exit_Requirements_and_Thesis_Defences.

5 Progress reports

The progress of all students will be reviewed at least twice yearly by the Supervisory Committee, normally in September and in January. Additional reviews may be conducted at the request of the student, member(s) of the Committee, or the Graduate Program Director.

The Supervisory Committee shall review:

- (i) program course and ancillary requirements
- (ii) performance in courses
- (ii) progress in research (if applicable)

Recommendations will be made to the Graduate Program Director in writing, using the prescribed form given in the Appendix. Three possible outcomes of the progress review are possible: “satisfactory”, “unsatisfactory” and “needs monitoring”.

If the student’s progress is unsatisfactory, the student will be placed on probation or asked to withdraw from the program.

If the Supervisory Committee determines that the student needs monitoring, additional progress review(s) shall be conducted at times determined by the Committee.

6 Graduate research proposal

Students in both MRP and thesis streams must submit and have approved by their supervisory committee a proposal of research at the time when they register for the first time for MATH 5P99 (MRP students) or MATH 5F90 (thesis students). The proposal must be submitted in writing to the supervisor and signed by all members of the supervisory committee before the start of the term.

7 Graduation procedure in the MRP stream

Students who wish to graduate into the MRP stream must submit, via student portal, “intention to graduate”, paying the required fee. The last day to submit the intention to graduate without late fee is about 3 months before the convocation, the exact date is listed at <https://brocku.ca/important-dates/graduate-studies/>.

Once the MRP is completed, all students in the MRP stream are required to submit a written report and deliver a formal public presentation summarizing the MRP. This must be done as follows:

1. The student, after obtaining permission from the supervisor(s) to do so, submits (via email) the PDF file of the completed MRP report to the Graduate Admin Coordinator (further abbreviated as GAC, currently Elena Genkin, D473, egenkin@brocku.ca) and asks for arranging the presentation.
2. GAC sends the the PDF file of the MRP report to supervisor(s) and other member(s) of the supervisory committee (with cc: to GPD) and arranges the time and room for presentation.
3. Presentation is delivered. After the presentation, the supervisory committee reviews the MRP report and the presentation and determines the final mark for Math 5P99. The final mark is then communicated to the GAC.

Important: the final mark for Math 5P99 must be communicated to GAC at least a month before the convocation (check with the GAC for the exact deadline). **This deadline is firm.**

4. The student arranges for printing of hard copies of the MRP report and submits them to the Department. This is to be done as follows:
 - The student needs to obtain a report number from the departmental office (from the administrative assistant in J415). Reports will be numbered using YYMMDD-NN format, where YY=year, MM=month, DD=day, NN=consecutive number (in the case if more than one report is submitted on a given day).

- The front page featuring the report number must be printed (preferably using a colour printer) using the template available in electronic form from the math office.
- Student arranges for printing and binding of two copies (more if needed) of the report featuring the aforementioned front page. It is strongly recommended that students use the binding service offered by the Brock print shop (G209). Students should order bind cover with red spine and transparent front cover. All printing and binding costs are the responsibility of the student.
- The student delivers one copy to the administrative assistant in J415 and one copy to supervisor(s).

5. Once the above steps are completed, GPD will review student's record and issue final approval. No input from the student is needed at this stage.

The above steps should be carried out in the same order as listed, with one possible exception: with the approval of the supervisor and the supervisory committee, step 4 (printing and depositing the hardcopy) can be done before the presentation.

8 Graduation procedure in the thesis stream

Students who wish to graduate into the thesis stream must submit, via student portal, "intention to graduate", paying the required fee. The last day to submit the intention to graduate without late fee is about 3 months before the convocation, the exact date is listed at <https://brocku.ca/important-dates/graduate-studies/>.

M.Sc. thesis must be defended and submitted in final form and the final mark for Math 5P90 must be communicated to the Graduate Admin Coordinator at least a month before the convocation (check with the GAC for the exact deadline). **This deadline is firm.**

8.1 Thesis submission procedure

8.1.1 Permission to write the thesis

Once the student and the supervisor determine that the research project has met its goals to complete a thesis, a meeting of the Supervisory Committee is called. The committee will decide if the student can spend his/her remaining research time writing the thesis. The decision will be indicated on the Graduate Student Progress Form and forwarded to the Graduate Program Director.

8.1.2 Thesis format

A current description of the thesis format can be found at <http://www.brocku.ca/graduate-studies/current-students/thesis-procedures>. The Department of Mathematics has no additional regulations regarding thesis format.

8.1.3 External thesis review and defence date

Once the supervisor (in consultation with other members of the supervisory committee) agrees that the thesis is ready for external review, the student forwards the PDF file of the completed thesis to the Graduate Admin Coordinator and asks for arranging the defence.

The supervisor must also complete a list of three potential external examiners, ranked in order of preference, and forward it to GAC. Note that an external examiner may be external to the graduate program but internal to Brock University. In such case, approval must be obtained from the Dean of Graduate Studies.

The thesis along with the list of potential external examiners are then forwarded to the Office of the Dean of Mathematics and Science. The Dean (or Associate Dean) will appoint the external examiner and forward a copy of the thesis along with the program's policies for thesis examinations to the external examiner.

Once the Graduate Program Director and the departmental graduate administrative assistant receive notification of who the external examiner will be, a defence date will be set. The date will normally be 4-6 weeks from the external examiner notification date. The remaining examination committee members will then receive a copy of the thesis for the final defence.

The external examiner will be expected to submit a written evaluation at least one week prior to the defence. The external examiner's report will be shared with other members of the Examination Committee and the student. If the external examiner reports that the thesis is not ready for defence, the student must revise the thesis within a reasonable period of time. The revised thesis must be approved by the Supervisory Committee and then resubmitted to the external examiner. If the external examiner's evaluation is so unfavorable as to jeopardize the approval of the thesis, the defence should be postponed and the Graduate Program Director, in consultation with the Supervisory Committee, will recommend a subsequent course of action.

All typing and other costs of preparing the thesis are the responsibility of the student.

8.2 Thesis defence

8.2.1 Examination Committee composition

The Examination Committee will consist of the Dean of the Faculty of Mathematics and Science or the Dean's delegate, who will serve as the non-voting chair of the Examination Committee, the external examiner, the supervisor, and two faculty representatives from the Department of Mathematics appointed by the Graduate Program Director (normally the other two members of the Supervisory Committee).

8.2.2 Format of the defence

The defence will consist of three parts, the first two of which are open to the public: (1) a research presentation by the candidate (2) an oral examination session, and (3) an in camera meeting of the Examination Committee. The total duration of the oral examination is not to exceed two hours. The defence proceeds as follows.

- The examination chair introduces the Committee members and the candidate, and explains the format of the defence.
- The candidate gives a presentation, normally 15-20 minutes in length.
- The floor is open to questions from the audience; members of the the Examination Committee will normally not ask questions at this time.
- This is followed by a short (about 10-15 minutes) break.
- The Examination Committee meets with the candidate for a further period of questioning. During this examination session, all questions and comments will be related to the scientific contents of the thesis.
- The order of questioning is usually the external examiner, the first member of the Supervisory Committee (the Supervisory Committee chair), the second member of the Supervisory Committee, and the supervisor. The chair of the Examination Committee is not required to ask questions.
- When the committee is satisfied with the questioning, the chair thanks the candidate, who then leaves the room so that the Committee may deliberate in camera.
- The candidate is invited back into the room to be informed of the committee's decision.

8.2.3 Possible outcomes of the defence

All members of the Examination Committee, except the Committee chair, will vote on the outcome of the exam. All aspects of the written work as well as the student's performance during the defence must be taken into consideration when determining the grade.

A Fail grade will be awarded if two or more members of the Committee vote to fail or if the external examiner deems the thesis to have failed. If a member votes against the candidate's defense, he/she must provide a written explanation.

A Pass grade will be awarded if the majority of members of the Committee, including the external examiner, vote to pass. Theses grades shall be reported to the Faculty of Graduate Studies as either Pass or Fail. A pass grade must be further differentiated as one of: Acceptable as is, Acceptable with minor revisions, Acceptable with major revisions.

If major revisions are necessary, the Examination Committee will specify the areas for revision and the date by which the revised thesis is to be returned to the Graduate Program Director. The date will normally be within four to twelve weeks.

In the instance of a failed defence, the candidate will be withdrawn from the program.

8.2.4 Submission and deposit of the thesis

When the thesis is in its final form after the successful defence, the student will submit the thesis to the Brock University Digital Repository, following procedure outlined in: <https://brocku.ca/graduate-studies/mrpthesis-preparation/>.

9 Other regulations

9.1 First draft submission for tuition fee reduction

Once the student has completed a first draft of the thesis or the MRP paper, and it has been reviewed by the supervisor, the student may apply for the Final Stage Status. For requirements and procedures, please refer to the current Graduate Calendar.

9.2 Acting supervisor

If the supervisor of a graduate student takes sabbatical leave or is traveling for an extended period, he or she should designate another member of the supervisory committee to serve as an acting supervisor. Acting supervisor will sign forms for the student. If reasonable communication between the supervisor and the student can be maintained during the leave, supervisor will continue to advise and direct the student on matters related to the MRP or thesis as well as on course selection. If such communication is not possible, the acting supervisor will assume this role. Detailed arrangements on the above matters should be made prior the leave.

9.3 Attendance of departmental events

Graduate students are expected to attend the following events:

- M.Sc. thesis defences and MATH 5P99 project presentations;
- departmental seminars and colloquia;
- other departmental or university events if requested by the Graduate Program Director or the supervisor.

Unless announced otherwise, mathematics students are expected to attend mathematics events, while statistics students - statistics events.