



**Graduate Studies in  
Mathematics and Statistics  
University of New Brunswick**  
Latest Revision: April 2016

This document should be read by all graduate students and supervisors in Mathematics and Statistics on a regular basis. Additional information on regulations and requirements of the School of Graduate Studies (SGS) appear in the [UNB Graduate Calendar](#) (available on the UNB website). If there is any conflict between this document and that of the School of Graduate Studies regulations, the latter will prevail.

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Abbreviations

DoGS: Director of Graduate Studies, Mathematics and Statistics  
GAC: Graduate Affairs Committee  
GAU: Graduate Academic Unit  
GPA: Grade Point Average  
SGS: School of Graduate Studies

## **1. Admission Requirements**

In addition to all requirements stipulated by SGS (minimum GPA of 3.0/4.3, or "B" average, or an Upper Second Class degree, and English language proficiency tests where appropriate) candidates for an MSc Mathematics should hold a Bachelor's degree with first or second class honours in mathematics or a related discipline from a recognized university; candidates for an MSc Statistics should hold a Bachelor's degree with first or second class honours in statistics or a related discipline from a recognized university; candidates for a PhD in Mathematics or Statistics should hold a Master's degree in mathematics or statistics, respectively, from a recognized university. Promising students may transfer from an MSc program to a PhD

program. The normal time required for completion of the requirements for an MSc is at least one year, students with high standing in a Majors program may be admitted to a two-year MSc program.

International students may be directed toward further English training (at their own expense) external to the Mathematics and Statistics graduate program should they have a marginal entry score. This directive may also be implemented during study for the MSc/PhD if there is poor performance by the student.

## **2. Graduate Academic Unit (GAU)**

The graduate program in Mathematics and Statistics at UNB involves students and faculty from three departments and two faculties on two campuses. The Mathematics and Statistics GAU consists of all potential supervisors for Mathematics and Statistics graduate students. Membership is open to all UNB Faculty and Research Associates who work in an area of mathematics or statistics. Applications for membership in the GAU are available from the Director of Graduate Studies (DoGS).

The GAU meets as a whole annually, where non-urgent votes may be passed (time-sensitive matters may be voted on by the GAU via e-mail). However, most matters relating to graduate studies are overseen and dealt with by the Graduate Affairs Committee (GAC). Both the GAU and the GAC are chaired by a the DoGS.

### **A. GAC Structure**

The GAC consists of the DoGS, Associate DoGS and two additional members of the GAU. The DoGS is usually a 3-year position. Other GAC members serve on two-year terms. Where there is business to attend, the GAC will meet monthly during Fall and Winter, and Bi-monthly during the Summer.

### **B. GAC Reporting**

Based on University governance, it is understood that the DoGS reports to the Executive Committee of the Graduate School. The GAC updates, and provides written recommendations to the GAU of matters as an agenda item at monthly Faculty Meetings. Recommendations may be passed at GAC meetings or by e-mail vote. Quorum will consist of the DoGS, or his nominated replacement, plus two other GAC members. Members shall not vote where there is conflict of interest.

### **C. GAC Duties**

- a. Review graduate applications where a potential supervisor wishes to accept a student who does not meet standard entry requirements, or if the potential supervisor wishes to appeal a student rejected by the GAU.
- b. Review cases of Program Transfer or Termination, Graduate School Tenure, and Program Extension, and provide a recommendation to the GAU.
- c. Review and rank or nominate applications for the awards and scholarships.

- d. Ensure that the Program of Study is of a reasonable and relevant standard.

D. DoGS Duties

- a. Chair meetings of the GAC.
- b. Report at GAU meetings regarding meetings of the GAC.
- c. With the assistance of the Graduate Studies Coordinator, deal with initial inquiries regarding graduate student applications.
- d. With the assistance of the Graduate Studies Coordinator, collect, sign and forward copies of student Annual Progress Reports to the Dean of Graduate Studies.
- e. Ensure that Student Advisory Committees review theses in a timely manner.
- f. With the assistance of the Graduate Studies Coordinator, maintain an up-to-date copy of each graduate student's Program of Study form.
- g. Meet with new graduate students every September and January to introduce them to the department, faculty and program requirements.
- h. Circulate to all graduate students, every September and January, a list of graduate courses to be offered in the coming term, and a schedule of upcoming awards deadlines.
- i. Facilitate approval of theses by the GAU.
- j. Chair M.Sc. oral examinations.

E. Associate DoGS

The Associate DoGS will be elected from the sister campus of the DoGS and handles all DoGS duties on that campus. The Associate DoGS reports to the DoGS.

### **3. Supervisory Committee**

Each student accepted for graduate studies in Mathematics and Statistics will generally pursue a research program under the direction of one faculty member approved by the GAU (the supervisor). The overall graduate program of each student is under the direction of a Supervisory Committee comprising the supervisor and at least two other members approved by the GAU. Membership in the GAU is not a prerequisite for membership on a supervisory committee.

Students are responsible (with consultation from their supervisor and the DoGS) for finding at least two members who will form this committee along with their supervisor. Each student must form and meet with their Supervisory Committee and complete the Program of Study form. *This must be done within the first month of starting a graduate program.*

It is the responsibility of the graduate student to schedule Supervisory Committee meetings. At least one such meeting must be held in November each year. During these meetings, students will make a brief presentation of their research progress and report which required courses have been

completed, which remain, and the status of their seminar course. They will also outline their plans for completing the remaining degree requirements including their research project and the writing of their thesis/report. If there are any significant deviations from the last completed Program of Study, a revised Program of Study should be completed.

Progress will be recorded using the SGS “Annual Progress Report” form. This form can be received from the Graduate Studies Coordinator. The student will bring the form to the meetings, it must be completed and submitted to the Graduate Studies Coordinator before December 1<sup>st</sup> of every year.

Either the student or the supervisor can request additional meetings of the Supervisory Committee at any time. Such meetings are meant to solve unexpected problems that either the student or supervisor are facing.

The Supervisory Committee acts on behalf of the student in requesting a transfer from an MSc program to a PhD program and in requesting the extension of a graduate program. In both cases, the committee should meet with the student and then present any recommendations to the Director of Graduate Studies.

Conflict resolution should follow this chain:

- A. Supervisor
- B. Supervisory Committee members
- C. Director of Graduate Studies
- D. Department Chair
- E. Dean of the student’s Faculty

#### **4. Graduate Student Finances**

##### **A. Fees**

Information on fees and payment due dates can be obtained from Financial Services. Students are responsible to make certain their fees are paid before the deadlines. Financial Services does allow fees to be deducted from some financial assistance.

##### **B. Financial assistance**

Monetary support toward payment of fees and cost of living may come from the student’s own funding or external scholarships (eg., NSERC PGS). For those students who are accepted with financial offers, the sources are typically as follows.

- *Graduate Academic Assistantship (GAA)*  
This typically comes from external funding obtained by a student’s supervisor. The GAA is provided to cover time spent on academic work and is tax-free. NOTE: GAA funding is conditional on satisfactory progress by the student and continued support to the supervisor from an external funding agency.
- *Graduate Research Assistantship (GRA)*  
This consists of funds provided by the SGS. Details of distribution

vary by department. In the Department of Mathematics and Statistics, Fredericton campus, funds are distributed twice annually in the Fall and Winter terms as tax-free awards. Available funds are typically divided equally between full-time thesis-based MSc and PhD students in good academic standing in their first three and six years of study respectively.

- *Graduate Teaching Assistantship (GTA)*

This consists of funds provided by the SGS. Details of distribution vary by department. In the Department of Mathematics and Statistics, Fredericton campus, teaching assistantships are offered first to full-time thesis-based MSc and PhD students in good academic standing and in their first two and four years of study respectively. If funds allow, additional assistantships will be offered first to remaining full-time thesis-based students in good standing, then to full-time report-based MSc students in good standing. GTA guidelines can be found in Appendix A.

- *Research Assistantship (RA)*

Any money received by a student for additional work not directly related to the thesis research or undertaken for a supervisor is paid as an RA. Minimum rate of pay is set by agreement between the University and the UNB Graduate Student Union. Salary is subject to tax and EI deductions.

Full Time Graduate Students are limited to a maximum of 10 hours taxable employment per week with a cap of 130 hours over the duration of an academic term.

## **5. Courses**

It is important that students register in the appropriate thesis course every term of their degree: MATH/STAT 6997 for MSc Thesis; MATH/STAT 6996 for MSc Report and MATH/STAT 6998 for PhD. Failure to do so each term will delay processing of GRA, GTA and GAA payments.

Students should register for the appropriate seminar course each fall and winter term until the course requirements are complete: Math/Stat 6392 for MSc students; Math/Stat 6492 for PhD students.

Graduate level courses are those numbered as 6000 or above. A list of courses is available here:

[Mathematics courses](#)

[Statistics courses](#)

MSc Candidates who choose the Report option must complete seven (7) graduate courses, including at least three from Group A and the remainder from Group B. MSc Candidates who choose the Thesis option must complete five (5) graduate courses, including at least two from Group A and the remainder from Group B. PhD Candidates must complete four (4) graduate courses, at least three from Group A and the remainder from Group B.

Rules for selection of courses are as follows.

- A. MSc in Mathematics students must take at least two Group A Mathematics courses, including MATH 6392, and at least one more course from the Mathematics listings.
- B. MSc in Statistics students must take STAT 6392, STAT 6211 and at least two more courses from the Statistics listings. With Committee approval, the candidate for an MSc may replace at most two Group B courses by one-term graduate courses listed elsewhere in the calendar.
- C. For PhD candidates, rules for selection of Group A courses are the same as for the MSc programs, with MATH/STAT 6392 replaced by MATH/STAT 6492. A candidate for a PhD holding an MSc from this Graduate Academic Unit is not exempt from MATH/STAT 6492.

The Supervisory Committee must approve the selection of all courses. Additional courses may be required and will be determined by the committee in consultation with the Director of Graduate Studies. Term courses must be at least three credit hours.

## **6. Applied Mathematics and Theoretical Physics**

Applicants who have a suitable background in Applied Mathematics and Theoretical Physics may be admitted to an MSc program in these areas which is offered jointly by the GAU of Mathematics and Statistics and the GAU of Physics. In order to enter the program, prospective students will require the approval of both GAU's. Completion of this program will be officially noted on the student's transcript.

- A. A minimum of nine one-term graduate courses selected from appropriate courses offered by both GAU's. A maximum of four of these courses may be replaced by undergraduate 4000 level courses selected from the GAU other than the one in which the student is registered. A student may replace two of these 4000 level courses from a GAU other than Mathematics and Statistics or Physics. All course selections require the approval of both the GAU's.
- B. A report on an assigned topic.
- C. Any undergraduate courses required to make up deficiencies in the candidate's background (apart from those mentioned in A above).

The examining committee for the report shall normally consist of at least three faculty members drawn from the two GAU's, where one of whom is the supervisor and the majority of whom are members of the Department in which the candidate is registered.

## **7. Comprehensive Exams**

PhD students and MSc students transferring to a PhD program are required to pass three Comprehensive Exams in the first 18 months of their program.

Each comprehensive examination is a three-hour written paper. One examination must be in the candidate's field of specialization. The remaining two must be chosen from the following topics: algebra; analysis; combined algebra and analysis; applied mathematics; differential geometry; statistics I; statistics II. The Supervisory Committee must approve choice of examinations. Reading lists for comprehensive examinations are updated periodically, and are available to registered students upon request.

Comprehensive examinations are typically scheduled at the end of each academic term. Students should choose their exam topics early in their first term to facilitate scheduling.

A student who fails a comprehensive exam a second time will normally be required to withdraw from the PhD program.

## **8. Thesis and Report Guidelines**

### **A. Regulations and Guidelines**

The student should refer to sections 21 and 22 of the Graduate Calendar and to the regulations and guidelines on the SGS website. These should be adhered to in order to avoid unnecessary delays in the final acceptance of the thesis.

### **B. Approval of Thesis**

Upon approval of the thesis by the supervisor, the student must submit a complete draft copy of the thesis to each member of the Supervisory Committee. This copy should conform to all requirements of the SGS and Mathematics and Statistics GAU (see "Regulations and Guidelines for the Preparation and Submission of Graduate Master's Theses; PhD Dissertations and Reports" on the SGS website). LaTeX templates for thesis preparation are available from the School of Graduate Studies under the Electronic Theses and Dissertations pages.

The Supervisory Committee will critically review the thesis for scientific content, proper form and grammar, and provide comments and suggested revisions to the student. Once comments and revisions are satisfactorily addressed and the thesis is approved by the Supervisory Committee, the appropriate Thesis Approval Form must be submitted to the Graduate Studies Coordinator.

### **C. Examination Boards**

In the case of an MSc Thesis or Report, an Examining Committee is proposed by the Supervisory Committee in consultation with the DoGS and according to the regulations in section 22 of the Graduate Calendar. The Examining Committee will be given three weeks to review the thesis and provide feedback to the candidate. At this point the Committee should fill out the Examining Committee Approval form and submit it to the Graduate Studies Coordinator.

If the committee approves the thesis, a date and time of the defense,

which has been agreed upon by all parties involved, should be indicated on the form. The date must be at least 7 days away. The student should submit their thesis title, abstract and CV to the Graduate Studies Coordinator along with the completed form.

#### D. PhD Examination and Defense

In the case of a PhD thesis, an Examining Board is proposed by the Supervisory Committee in consultation with DoGS and according to the regulations in section 21 of the Graduate Calendar. The list of proposed members is submitted to SGS by DoGS. All further coordination of the examination is handled by SGS. The student is responsible for ensuring that a complete copy of the thesis, a current CV and all forms as required by SGS are submitted to SGS. The Graduate Studies Coordinator can assist the student in this task.

The deadlines to apply (online) to graduate are March 1st for the May Encaenia or by Sept 1st for Fall Convocation: <http://www.unb.ca/graduation/>.

### **9. Program Transfer or Termination**

#### A. MSc to PhD

The student must write a letter to the Supervisory Committee seeking a change in program. Once the Supervisory Committee approves, a written request should be submitted to the DoGS. A change of program requires the approval from the DoGS to be sent to the SGS for review and final approval.

#### B. PhD to MSc

In some cases where a student is initially enrolled in the PhD program, the student or Supervisory Committee may seek a change to the MSc program.

If initiated by the student, he/she must write a letter to the Supervisory Committee seeking the change. If the Committee agrees, a written request should be submitted to the DoGS.

The Supervisory Committee may seek to initiate a change if the student is failing to maintain the appropriate GPA or struggling with the research. The Committee must first discuss with the student and provide in writing their concerns and expected satisfactory level of performance. The DoGS should be notified at this point and given a copy of the concerns and expectations. If improvement is not achieved within a time period agreed by the Supervisory Committee, they must make a written request to the DoGS for the change of program. This request should be copied to the student and include an outline of the remaining concerns.

#### C. Termination

Normally, any student whose CGPA falls below 3.0 or who receives a grade of D or F in any course will be required to withdraw from the School of Graduate Studies as per section 10 of the Graduate Calendar.

If at any time the student's supervisor deems the student's research progress to be unsatisfactory, a meeting of the Supervisory Committee should be convened. The Committee should provide a written report to the student and DoGS outlining their concerns and detailing progress that must be made over the next term and for the completion of the degree. If satisfactory improvement is not made by the student in the subsequent term, they will be required to withdraw from their program. Under the discretion of the Supervisory Committee and in consultation with DoGS and the Dean of SGS, the student may be given the option of transferring from the PhD to the MSc program or completing an MSc by Report.

The University may terminate a student's program at any time if fees are not paid, tenure is exceeded, or the SGS and University regulations are not adhered to.

Students may terminate their program at any time by informing their supervisor in writing, with a copy to the DoGS.

Whenever a program is terminated, the student is required to return to their supervisor any data that they have acquired during their tenure, along with any equipment provided to the student by the supervisor or University.

## **10. Graduate School Tenure and Program Extension**

The SGS has set limits on the lengths of Graduate Programs (section 14 of the graduate calendar): four (4) years for completion of the MSc degree and seven (7) years for the completion of the PhD degree. Students should note that this limitation does not require that the supervisor or GAU fund the student for this maximum length of time.

If a student feels unable to meet these deadlines, the problem should be discussed with the Supervisory Committee. If there are exceptional circumstances, the Committee may recommend requesting an extension. The supervisor and graduate student should make a written request to the DoGS at least six months prior to the deadline for the student's tenure in the program. The written request must explain the reasons for requesting an extension and include a timetable detailing what will be completed and by what dates. DoGS will submit a written request to SGS for approval of the extension.

APPENDIX A  
**GRADUATE TEACHING ASSISTANTSHIP (GTA) GUIDELINES (FREDERICTON  
CAMPUS)**

GTA's are recognized as an important facet of the graduate program. For our graduate students, they represent both an opportunity to gain valuable teaching experience and a source of income. For our instructors, they provide assistance with the teaching of undergraduate laboratories and tutorials in a variety of ways, such as setting up and dismantling laboratory material, demonstrating various aspects of the laboratory/tutorial, and grading student work.

GTA's are presently valued (2012) at \$2382.45 per unit, with a half unit representing an average of 7 hours work per week for one 12-week term (i.e., \$22.69 to \$23.69 per hour). Two GTA units per year are generally available for any graduate student requesting them. A maximum of 3 GTA units per year is allowable, but must be supported in writing by the student's supervisor and is subject to approval by both the Director of Graduate Studies (DoGS) and the Dean of Graduate Studies. Should funds be limited, priority for GTA's will be given to full-time graduate students in the first 2 years of an MSc or first 4 years of a PhD. Students who hold NSERC postgraduate scholarships (or an equivalent amount of funding) will generally be limited to 1 GTA unit per year, but may request an additional GTA unit if sufficient GTA funds are available.

GTA assignments are made by the DoGS, who will attempt to match any student and instructor requests for specific assignments. GTA's can be denied at the discretion of the DoGS, based on poor academic performance, poor GTA performance, and/or inadequate background. With this in mind, graduate students should be aware that GTA's are a privilege, not a right, and that certain reasonable expectations from instructors must be met in order to accomplish their undergraduate teaching requirements. By the same token, instructors are reminded that no more than an average of 7 hours commitment per week (excluding pre-lab meetings and preparatory reading) is to be expected from graduate students per term. With this in mind, instructors are asked to prepare a written synopsis of their requirements for GTA's, to be given to students assigned to their courses at the start of the term.

Undergraduate student evaluations of graduate student demonstrators will be used to provide feedback to the graduate students on how to improve their demonstrator skills, as well as to provide information for instructors and the DoGS on any problem areas or students. These evaluations will be administered by course instructors, with a copy of the results submitted to both the DoGS and the Chair.