Department of Mathematics and Statistics
Guidelines for Preliminary Exams

Overview

All Mathematics & Statistics doctoral students must pass written preliminary exams within 16 months from the start of their doctoral program and before their Oral Candidacy. Exams take place in May and December, typically during the week following the end of classes. Topics for each program are:

- **Applied Mathematics**: Complex Analysis, Differential Equations, Linear Algebra, Real Analysis
- **Pure Mathematics**: Complex Analysis, Linear Algebra, Real Analysis, Topology
- **Statistics**: Statistics I, Statistics II, Probability I, Probability II

Purpose

The preliminary exams are designed to:

- help students integrate their knowledge of advanced undergraduate mathematics
- give students and supervisors an early baseline indication of preparedness and mathematical maturity
- define initial standards clearly and uniformly for prospective and new students
- guide students' course selections in cases where a weakness is identified
- allow well-prepared students to move into research more rapidly
- allay potential concerns regarding TA assignments

Assessment

The following proficiencies are assessed on preliminary exams:

- mastery of basic mathematical/statistical skills
- clear evidence of the understanding of core concepts
- correctness of reasoning and logic
- clarity of exposition

Format

The length of each exam is typically two hours.

Students and examiners can obtain a syllabus and sample exam for each topic from the Graduate Program Administrator. Material to be tested on preliminary exams must be limited to the appropriate syllabus.
Questions on exams may be of any of the following four basic types, asking for:

- statements of core concepts, definitions or theorems
- examples of key ideas, or counterexamples
- proofs of important theorems or results
- applications of important theorems or results

Examination and Review Process

Examiners or their designates will be available for questions from students upon request during the exam. Each exam will be marked by the corresponding examiner(s). To ensure fairness and consistency, all exams are reviewed by members of the Graduate Committee prior to being written and after being marked.

Recommendations and Responsibilities

- Students are urged to begin their exam preparation well in advance of writing the exam. Given a student’s other responsibilities and commitments during the semester (course work, TA duties, seminar presentations etc), the recommended exam preparation period is three months.
- To aid in exam preparation, students are strongly encouraged to take (or at least audit) an appropriate course, where applicable, prior to writing a preliminary exam.
- Students will be informed in advance who their examiners are. Students are encouraged to meet with examiners early on to review and clarify the syllabus; such prior consultations have shown to increase students’ chances of success.
- Examiners are not expected or required to assist students with exam preparation (e.g. answer mathematical questions, provide solutions to sample exam questions etc.)

*** Good Luck! ***