

Draft
September 18, 2009

Assessment Plan

Department of Mathematics and Statistics

MS in Mathematics

Assessment Procedure

Each year, the graduate faculty in the Department of Mathematics and Statistics will meet to discuss the assessment of graduates from the previous year. We will assess each student according to the benchmarks/outcomes using the performance indicators stated in the following pages. Each student will be evaluated as

Meets expectations

Exceeds expectations

Fails to meet expectations

The results will be reported to the Graduate School and the Office of Assessment.

Department of Mathematics and Statistics

Assessment Plan for MS in Mathematics (Statistics and Operations Research Option)

BENCHMARK/ OUTCOME	PERFORMANCE INDICATOR OR ASSESSMENT	CRITERIA FOR PASSING	BENCHMARKS/ OUTCOMES ASSESSED
DEMONSTRATE BREADTH AND DEPTH OF KNOWLEDGE IN STATISTICS AND OPERATIONS RESEARCH	MS thesis or RP*, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in STAT 480A and 480B	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in STAT 480A and 480B	Student's ability to answer questions over a broad range of topics in statistics and operations research.
EFFECTIVELY COMMUNICATE KNOWLEDGE IN STATISTICS AND OPERATIONS RESEARCH	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in STAT 480A and 480B	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in STAT 480A and 480B	Student's ability to write solutions to problems in statistics and operations research. Student's ability to explain (orally) solutions to problems in statistics and operations research.
DEMONSTRATE AN ABILITY FOR ANALYTICAL THINKING IN STATISTICS AND OPERATIONS RESEARCH	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in STAT 480A and 480B	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in STAT 480A and 480B	Student's ability to synthesize problems and determine appropriate solutions.
EXHIBIT THE BEST PRACTICES, VALUES AND ETHICS OF THE DISCIPLINE	MS thesis or RP*, and thesis or RP presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part	Student's ability to cite the work of others, including data sources.
APPLY KNOWLEDGE OF STATISTICS AND OPERATIONS RESEARCH	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in STAT 480A and 480B	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in STAT 480A and 480B	Student's ability to use appropriate techniques to solve problems in statistics and operations research.

*RP = Research Paper

Department of Mathematics and Statistics

Assessment Plan for MS in Mathematics (Mathematics Option)

BENCHMARK/ OUTCOME	PERFORMANCE INDICATOR OR ASSESSMENT	CRITERIA FOR PASSING	BENCHMARKS/ OUTCOMES ASSESSED
DEMONSTRATE BREADTH AND DEPTH OF KNOWLEDGE IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421 and 450	Student's ability to answer questions over a broad range of topics in mathematics.
EFFECTIVELY COMMUNICATE KNOWLEDGE IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421 and 450	Student's ability to write solutions to problems in mathematics Student's ability to explain (orally) solutions to problems in mathematics.
DEMONSTRATE AN ABILITY FOR ANALYTICAL THINKING IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421 and 450	Student's ability to synthesize problems and determine appropriate solutions.
EXHIBIT THE BEST PRACTICES, VALUES AND ETHICS OF THE DISCIPLINE	MS thesis or RP and thesis or RP presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part	Student's ability to cite the work of others, including data sources.
APPLY KNOWLEDGE OF MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421 and 450	Student's ability to use appropriate techniques to solve problems in mathematics.

Department of Mathematics and Statistics

Assessment Plan for MS in Mathematics (Computational and Applied Mathematics Option)

BENCHMARK/ OUTCOME	PERFORMANCE INDICATOR OR ASSESSMENT	CRITERIA FOR PASSING	BENCHMARKS/ OUTCOMES ASSESSED
DEMONSTRATE BREADTH AND DEPTH OF KNOWLEDGE IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421, 450, 465	Student's ability to answer questions over a broad range of topics in mathematics.
EFFECTIVELY COMMUNICATE KNOWLEDGE IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421, 450, 465	Student's ability to write solutions to problems in mathematics Student's ability to explain (orally) solutions to problems in mathematics.
DEMONSTRATE AN ABILITY FOR ANALYTICAL THINKING IN MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421, 450, 465	Student's ability to synthesize problems and determine appropriate solutions.
EXHIBIT THE BEST PRACTICES, VALUES AND ETHICS OF THE DISCIPLINE	MS thesis or RP and thesis or RP presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part	Student's ability to cite the work of others, including data sources.
APPLY KNOWLEDGE OF MATHEMATICS	MS thesis or RP, and thesis or RP presentation; or Comprehensive exam (written and oral parts) Performance in MATH 421 and MATH 450	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in MATH 421, 450, 465	Student's ability to use appropriate techniques to solve problems in mathematics.

Department of Mathematics and Statistics

Assessment Plan for MS in Mathematics (Mathematics Post-Secondary Education Option)

BENCHMARK/ OUTCOME	PERFORMANCE INDICATOR OR ASSESSMENT	CRITERIA FOR PASSING	BENCHMARKS/ OUTCOMES ASSESSED
DEMONSTRATE BREADTH AND DEPTH OF KNOWLEDGE IN MATHEMATICS	MS thesis and thesis presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in three courses selected from MATH 420, 421, 423, 435, 437, 450, 451, 464, 465, 466, OR 440, STAT 480A, 480B, 482.	Student's ability to answer questions over a broad range of topics in mathematics, statistics and operations.
EFFECTIVELY COMMUNICATE KNOWLEDGE IN MATHEMATICS	MS thesis and thesis presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in three courses selected from MATH 420, 421, 423, 435, 437, 450, 451, 464, 465, 466, OR 440, STAT 480A, 480B, 482.	Student's ability to write solutions to problems in mathematics, statistics and operations research. Student's ability to explain (orally) solutions to problems in mathematics, statistics and operations research.
DEMONSTRATE AN ABILITY FOR ANALYTICAL THINKING IN MATHEMATICS	MS thesis and thesis presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in three courses selected from MATH 420, 421, 423, 435, 437, 450, 451, 464, 465, 466, OR 440, STAT 480A, 480B, 482.	Student's ability to synthesize problems and determine appropriate solutions.
EXHIBIT THE BEST PRACTICES, VALUES AND ETHICS OF THE DISCIPLINE	MS thesis and thesis presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part	Student's ability to cite the work of others, including data sources.
APPLY KNOWLEDGE OF MATHEMATICS	MS thesis and thesis presentation; or Comprehensive exam (written and oral parts)	Satisfactory performance on (1) written master's thesis or research paper, and (2) oral presentation or, if the comprehensive final exam is selected, then satisfactory performance on (1) written part, and (2) oral part Satisfactory grades in three courses selected from MATH 420, 421, 423, 435, 437, 450, 451, 464, 465, 466, OR 440, STAT 480A, 480B, 482.	Student's ability to use appropriate techniques to solve problems in mathematics, statistics and operations research.

Guidelines for Master’s Exams in Lieu of Thesis or Research Project

1. An examining committee is set up by the Graduate Committee.
2. Courses to be covered by the exam will be determined by the examining committee.
3. The committee prepares Part 1 – Written Portion based on the courses selected in step 2 above. This is taken by the student at a time determined by the examining committee and the student.
4. The committee grades Part 1. If the student passes, then the committee prepares Part 2 – Extended Writing Part.
5. The student is given one week to complete this part. The student is expected to document sources used in the written submission.
6. The committee grades the Extended Writing Part. If the student passes this part, then Part 3 – Oral Exam is scheduled.
7. In the oral part of the exam, students will be required to defend the answers they gave in the written part, and may be asked other questions on the selected course work.
8. The examining committee assesses the student’s written and oral work and determines whether the student passes or fails.
9. A student may retake the exam once in a subsequent term.

Week of the Term	Task
9	Determine examining committee
10	Determine courses for Master’s Comprehensive Exam. The committee writes Part 1.
11	Student takes Part 1 – Written Portion
12	Committee grades Part 1. If the student passes, the committee prepares questions for Part 2.
13	Student given questions for Part 2 – Extended Writing Part. Student has one week to complete.
14	Student submits written solutions. If the student passes both Parts 1 and 2, the oral exam is scheduled for one week later.
15	Student takes Part 3 - Oral Part