Mathematics

Assessment Plan for the PhD Program

Program Learning Outcomes

The following learning outcomes are expected of the PhD students.

1. Students should have broad knowledge and understanding of the following core areas/sequences of mathematics:
   i) Algebra
   ii) Topology
   iii) Real Analysis
   iv) Complex Analysis
   v) Ordinary/Partial Differential Equations

2. Students should be able to formulate and solve mathematical problems in these areas.

3. Students should be able to understand, construct and communicate proofs of mathematical theorems.

4. Students should be able to search mathematical literature and gain comprehensive knowledge of current mathematical developments in their fields of specialization.

5. Students should be able to effectively conduct and communicate mathematical research, both verbally and in writing.

6. Students should be able to teach mathematics effectively, and apply mathematics in the real world.

7. Professionalization will be offered through a variety of training programs, such as Math 302 (Apprentice Teaching) Math 402 (Professional Development), and presentations and workshops from outside speakers and industry professionals.

Assessment

These outcomes are assessed through the following degree requirements:

• Students will be assessed through the performance on assignments and exams in required courses, including all of the five following core areas/sequences of mathematics:
   i) Algebra
   ii) Topology
   iii) Real Analysis
   iv) Complex Analysis
   v) Ordinary/Partial Differential Equations
• Students will be assessed through the performance on oral presentations in required courses.

• Students will be assessed through the performance on four qualifying examinations and must pass at least three of the exams at the Ph.D level and one at the MS level.

• Students will be assessed through the performance on an oral qualifying examination on their proposed research problem.

• Students will be assessed on satisfactory progress in the doctoral program by the normative time to complete the oral qualifying examination within 12 quarters and the doctoral dissertation and final thesis defense within 15 quarters.

• Students will be assessed on teaching effectiveness through student and instructor evaluations.

• Students should be able to produce a piece of original research work that is publishable in a peer-reviewed journal.

• An exit interview will be offered to graduating students to evaluate their program experience.
Assessment Plan for the MS Degree in Mathematics

Program Learning Outcomes

The following learning outcomes are expected of the Masters’ degree students.

1. Students should have broad knowledge and understanding of the following core areas/sequences of mathematics:
   i) Algebra
   ii) Topology
   iii) Real Analysis
   iv) Complex Analysis

2. Students should be able to formulate and solve mathematical problems in these areas.

3. Students should be able to understand, construct and communicate proofs of mathematical theorems.

4. Students should be able to study and understand mathematical articles and communicate them verbally.

5. Students should be able to teach mathematics effectively.

6. Professionalization will be offered through a variety of training programs, such as Math 302 (Apprentice Teaching).

Assessment

These outcomes are assessed through the following degree requirements:

1. Students will be assessed through the performance on assignments and exams in required courses, including two of the four following core areas/sequences of mathematics:
   i) Algebra
   ii) Topology
   iii) Real Analysis
   iv) Complex Analysis

2. As a substitute for one whole mathematical sequence, the student may pass the associated PhD qualifying exam with a passing grade at the MS level.

3. Students will be assessed through the performance on oral presentations in required courses.

4. Students will be assessed on satisfactory progress in the master’s program by the normative time to complete a master’s degree within 6 quarters.

5. Students will be assessed on teaching effectiveness through student and instructor evaluations.

6. An exit interview will be offered to graduating students to evaluate their program
Assessment Plan for the MS Degree in Applied Mathematics

Program Learning Outcomes

The following learning outcomes are expected of the Masters’ degree students.

1. Students should have broad knowledge and understanding of the following core areas/sequences of mathematics:
   i) Ordinary/Partial Differential Equations
   ii) Real Analysis

2. Students should be able to formulate and solve mathematical problems in these areas.

3. Students should be able to understand, construct and communicate proofs of mathematical theorems.

4. Students should be able to study and understand mathematical articles and communicate them verbally.

5. Students should be able to teach mathematics effectively, and apply mathematics in the real world.

6. Professionalization will be offered through presentations and workshops from outside speakers and industry professionals.

Assessment

These outcomes are assessed through the following degree requirements:

1. Students will be assessed through the performance on assignments and exams in required courses in the two following core areas/sequences of mathematics:
   i) Ordinary/Partial Differential Equations
   ii) Real Analysis

2. As a substitute for one whole mathematical sequence, the student may pass the associated PhD qualifying exam with a passing grade at the MS level.

3. Students will be assessed through the performance on oral presentations in required courses.

4. Students will be assessed on satisfactory progress in the master’s program by the normative time to complete a master’s degree within 6 quarters.

5. Students will be assessed on teaching effectiveness through student and instructor evaluations.

6. An exit interview will be offered to graduating students to evaluate their program