

# Annual Academic Assessment Report

## MATHPH

### 2022-2023

Across the many programs within the Department of Mathematical Sciences (BA/BS, MS, PhD) there are common learning objectives recognized by the faculty. While the program requirements show differences in the skills and tools employed within the various options, the learning objectives are stated broadly to apply to each.

- Critical and analytical thinking
- Effective communication of abstract and technical information
- Logical reasoning
- Mastery of computational tools for analyzing data and/or mathematical structure
- Problem solving
- Understanding of algorithms and processes

The data below is from the Office of Strategic Analytics & Insights and records the number of Doctorate degrees awarded in the last seven years (average: 4).

2017	2018	2019	2020	2021	2022	2023
4	2	6	4	2	6	6

Several of these students go onto academic positions either as postdocs or tenure-track assistant professors.

### **Analysis of Assessment of Student Learning Outcomes**

The Department of Mathematical Sciences employs four main tools for assessing the student learning outcomes of the phd-level graduate students in our department.

- A. Course work
- B. Qualifying Examination
- C. Candidacy Examination
- D. Thesis

A. Course Work: Students complete a rigorous program of courses that is routinely monitored and updated by the department's Graduate Committee. Courses include assignments that assess the previously mentioned learning outcomes by means of written work (both computational and theoretical) and presentations (both formative and summative). The assignments involve a mix of individual work and work in groups.

B. Qualifying Examination: Students must pass three 4-hour long examinations in accordance with the department's Qualifying Examination policy. One of these exams may be substituted by receiving an "A" in a year-long qualifying sequence.

Each exam is co-written by faculty that most recently taught the course and graded separately by the pair to assess the student's knowledge of advanced level mathematics and statistics. Graduate faculty can look at a student's examination post grading.

In 2023, eight students took at least one Qualifying Examination for a total of 15 examinations given. Of these 15 examinations, 10 were passed at the PhD level, 2 were passed at the Masters level, and 3 were failed. Three students replaced a Qualifying Examination with an "A."

In 2022, five students took at least one Qualifying Examination for a total of 14 examinations given. Of these 14 examinations, 7 were passed at the PhD level, 5 were passed at the Masters level, and 2 were failed. Four students replaced a Qualifying Examination with an "A."

C. Candidacy Examination: After completing the Qualifying Examination, a student pursuing a PhD must take and pass an Oral Candidacy Examination according to the department's policy. The student's performance is evaluated by a committee consisting of the student's intended PhD advisor and two other graduate faculty chosen in consultation with the advisor.

The format is decided by the advisor and consists of either a presentation followed by questions, or an oral examination over advanced course work.

Two students successfully passed their Oral Candidacy Examination to date in 2023. Two other students passed the Oral Candidacy Examination in 2022.

D. Thesis: A thesis must be written and successfully defended before a committee consisting of the PhD advisor and two other graduate faculty chosen in consultation with the advisor. The thesis and its defense are assessed by the committee for its contribution to and significance in the relevant discipline.

#### Changes To Degree Planned or Made Based on Assessment

We have no immediate plans to change based on this assessment.

#### Changes To the Assessment Process Planned or Made

An "Exit Interview" survey has been informally conducted in recent years to some of our graduating graduate students. We plan to expand this assessment tool to all graduate students that are leaving our program.