Institutional Effectiveness Report

2018-19

Programs: Mathematics MS

College and Department: College of Arts & Sciences - Mathematics

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Mission: All undergraduate degree programs at Tennessee Tech require at least one course in mathematics and many require several courses. The Department of Mathematics provides a variety of general education courses, introductory and advanced undergraduate courses in support of STEM majors, and graduate-level courses for the MS in mathematics and other graduate programs.

As a central part of a STEM-infused comprehensive institution, the Department of Mathematics strives to create successful learners of the subject of mathematics in the university community and in the community where we live. Learning opportunities are provided to students of all disciplines to advance their understanding of mathematical concepts and their effective use of analytic practices and critical thinking as useful in their studies and everyday life. The departmental faculty conduct research in mathematics and as part of interdisciplinary teams and provide service to the department, college, University, and mathematical community.

The mission of the TTU Department of Mathematics is to promote the learning of mathematics through effective teaching, research, and public service. Such learning opportunities are provided to students of all disciplines in support of the mission of the University.

Program Goals:

PG 1: The MS in Mathematics degree program will average at least 5 graduates per year.

PG 2: Mathematics graduate students will participate in extracurricular activities related to mathematics.

Student Learning Outcomes:

SLO 1: All MS in Mathematics graduates will demonstrate knowledge of graduate-level Algebra and Analysis.

Mathematics MS graduates will demonstrate knowledge of graduate-level Algebra and Analysis by earning grades of B or better in Math 6110-Abstract Algebra and a 6000-level course in Analysis (Math 6010-Functional Analysis, Math 6310-Complex Analysis, or Math 6410-Real Analysis).

SLO 2: All MSMCID 2r.6 (y)-4/ (s)-1.3a4.7 (S)3(A)1.9(t)-3 ((M)-4.6 it)-3 (ra)isg gtrans1.3 (i wd)23 (ii(A)d6.6 (r b)139(t)Td(i)

A departmentally developed curriculum map can be found in Appendix 1 that shows the connections

between courses and student learning outcomes.

Assessment Methods:

1. Count of the number of MS in Mathematics graduates in the previous July 1-June 30 time period: The number of students earning the MS in Mathematics in the previous year is determined and trends are tracked using a 5-year average of the number of graduates.

   Threshold of Acceptability: Five-year running average of 5 graduates per year.

1. Count of the number of presentations by graduate students and guest speakers: The b.13 (p)-.7i(n)5(s)343(t(

Results:

The MS in MATH program graduated 3 students during the 2018-19 academic year which is below our target of graduating 5 students each academic year. For the most recent five academic years the program is averaging 5.6 graduates per year. We anticipate having 6 graduates for the upcoming 2019-20 academic year.

Number of Degrees Awarded July 1-June 30

	2014-15	2015-16	2016-17	2017-18	2018-19
Male	4	7	2	1	2
Female	2	2	4	3	1
Total MS in MATH	6	9	6	4	3

One graduate student presented a research poster at a national conference.

The departmental Graduate Advisor arranged weekly meetings of the Graduate Seminar. The faculty typically present talks each week in the fall, while the graduate students present talks in the spring. All graduate assistants gave a talk in the Graduate Seminar. In addition, three students studying algebra regularly presented talks in an Algebra Seminar during the academic year.

The leader of the Teaching Seminar arranged for weekly meetings. All graduate teaching assistants

Each 2018-19 graduate demonstrated a breadth of knowledge of mathematics by completing Math 6110-Abstract Algebra and a 6000-level course in Analysis with a grade of B or better.

All three 2018-19 graduates completed a thesis and demonstrated a depth of knowledge by defending his/her thesis and having it approved by an advisory committee. The attached file contains the rubric used by thesis committees to assess student mastery of thesis topic and the oral exam portion of the thesis defense.

Modifications for Improvement

As of 2019, the MS program is graduating a 5-year moving average of 5.6 students per year. Although this is above the program goal of graduating 5 students per year, steps are taken to ensure the moving average stays well above 5 per year. First, faculty are being encouraged to recruit students from their classes for the program. Second, Math majors with a GPA above 3.5 are being told about the new Fast-track to Masters program.

The Graduate Faculty will consider ways to improve the thesis defense rubric. The faculty believe our assessment rubric can be improved to better assess student performance in the thesis defense.

Appendices

1. Math MS Curriculum Map
2. Rubric for Master's Defenses/Oral Exams

Rubric for Master's Defenses/Oral Exams

Student demonstrated knowledge of general graduate

Student demonstrated knowledge of his or her mathematical area of emphasis

student explained the ideas contained in his or her thesis

___ completely_____satisfactorily_____unsatisfactorily_____not at all