2021-2022

Mathematics MS

Emphasize Written Communication Skills

Goal Description:

The curriculum will provide students with opportunities to develop written communication skills typically required of professionals in the area of study. Thesis students typically gain this experience automatically as a part of the thesis writing process, and our non-thesis students will receive similar training as they create a written report with their research advisor. Moreover, our sequence of required courses that are not a part of the core now require writing intensive tasks throughout the four semesters that our students are enrolled.

Providing Department: Mathematics MS

Progress: Ongoing

RELATED ITEMS/ELEMENTS -----

RELATED ITEM LEVEL 1

Demonstrate Graduate-Level Research Skills

Learning Objective Description:

Students completing the MS with a thesis will demonstrate skills in completing original research.

RELATED ITEM LEVEL 2

Comprehensive Examination

Indicator Description:

Students in the MS program will take a written comprehensive examination in the areas of abstract algebra and analysis. The examination will be scored by a committee of faculty.

Criterion Description:

At least two-thirds of our students will pass their comprehensive examinations on their first attempt.

Findings Description:

In January 2022, we had six students sit for their first attempt at the comprehensive exam in algebra, and all six received a grade of PASS or HIGH PASS. Moreover, we had a different group of six students sit for their first attempt at the comprehensive exam in analysis, and five received a grade of PASS or HIGH PASS or HIGH PASS. This met our goal. We shall review the upcoming examinations in August 2022 during the next assessment cycle.

RELATED ITEM LEVEL 2

Teaching Seminar

Indicator Description:

Graduate faculty will lead a teaching seminar with participation from graduate students. This seminar will meet at least monthly.

Criterion Description:

Because many of our MS students will either continue in doctoral programs (which require teaching as part of their graduate assistantships) or as instructors at 2-year schools, quality teacher training is a valuable component of our MS program. Almost all of our tenure-track mathematics faculty regularly experiment in their classrooms with evidence-based, innovative teaching techniques. This will be shared with graduate students, along with an examination of current literature on teaching methods for higher education.

Findings Description:

Heading into the Fall 2022 semester, we anticipate seven graduate TA's will teach a combination of MATH 1314 (college algebra) and the corequisite course N014. These students met regularly during the Spring 2022 semester, and will continue to meet over the summer months, to prepare for this. A new textbook and software system has been selected to better coordinate the two courses.

Update to Previous Cycle's Plan for Continuous Improvement Item

Previous Cycle's Plan For Continuous Improvement (Do Not Modify):

Closing Summary

Our planning and assessment efforts for the coming academic year are focused on the following areas:

- 1. Enhanced recruiting efforts, especially from HBCU and HSI schools. We will also focus new recruiting efforts in the northeastern U.S. states, where many students are unaware of graduate programs that focus specifically on a M.S. degree.
- 2. Continue our current development of new content delivery options for many of our graduate courses, including hybrid and online courses. We plan to work with our M.A. program to maintain an ability to offer 3-4 such courses each academic year, more than previously anticipated.
- 3. Initiation of a Computational and Applied Mathematics concentration that complements the data science focus in our department and responds to the needs of potential community partners that can provide external funding for graduate students. This will move forward in tandem with the proposal for a new undergraduate degree program in data science.
- 4. Formalizing the Algebra, Geometry and Topology concentration that highlights our faculty strengths in these areas. Depending on our ability to hire appropriate new faculty, some interest has also been discussed in building a concentration in the areas of Analysis and Financial Modeling.
- 5. Refinement of our initial plan for a five-year BS/MS program. We plan on submitting a revised version during the 2022-2023 academic year (this was postponed for a year during the pandemic) after consulting with our college and the Graduate School about issues in admission and credit hour requirements.
- 6. We continue to build a Graduate Teaching Seminar that mentors our TA's as they prepare to teach for the first time and then builds a collaborative group for support during their first semester in the classroom. This is an essential component of our work on the Math Initiative with the Office of Academic Affairs. The seminar will build off first-year students' experiences in our embedded tutoring program and supporting the developmental math program that has been expanded in coordination with the Academic Success Center. Resources have been identified that can be used to make the transition from that semester into a TA position.

Update of Progress to the Previous Cycle's PCI:

- 1. Recruitment efforts involving domestic students did not produce any positive results, and this seems to be very common throughout the U.S. at this time. All successful new recruits were from outside the U.S.
- 2. A hybrid course was successfully run in Fall 2022, and we continue to offer a rotation of 3-4 courses in a fully online format as well.
- 3. Review of the undergraduate program in data science is pending, so we have put on hold any plans for a concentration in computational and applied mathematics.
- 4. This past year we saw the departure of one-third of the senior faculty specializing in algebra and geometry, so as with the previous item we have put on hold any plans for a concentration in algebra, geometry and topology.
- 5. We continue to seek assistance in overcoming the hurdles that exist for approval of a 5-year BS/MS program. Our new department chair has expressed an interest in working with us to move the plan forward.
- 6. Training of graduate TA's has been rolled into the coordination of our courses in college algebra (MATH 1314) and the corresponding corequisite course. Each new TA will teach one each of these courses in a fully coordinated manner in Fall 2022.

New Plan for Continuous Improvement Item

Closing Summary:

Our plan for improving the program in the coming academic year focuses on four items:

- 1. Initiation of a summer internship program for students who enroll in Fall 2022 or Spring 2023, in tandem with the statistics program.
- 2. Careful coordination of the new teaching experiences for our returning students that will be assigned TA duties.
- 3. Improvement of the Calculus Tutoring program from Spring 2023, in coordination with the ASC, to provide an appropriate environment for graduate students to assist with courses in our calculus sequence.
- 4. Rebooting the planned 5-year BS/MS program in mathematics, with guidance from the new department chair.