Mathematics & Statistics Department Mission Statement

The primary mission of the Department of Mathematics and Statistics is to provide high quality mathematics education to mathematics majors, to students in other majors enrolled in our mathematical content courses, to students in our general education courses, and to students in developmental mathematics courses.

As a service to the College and University, it also is part of our mission to provide leadership and expertise in questions of mathematics and statistics as necessary across the disciplines.

In broader terms with regards to the dissemination of mathematical knowledge, our audience includes not only university students and faculty, but also our colleagues in the regional K-14 mathematical community and their students.

Finally, as a community of teacher-scholars, the department has an obligation to contribute to the effort to expand the corpus of knowledge of mathematics and statistics.

Mathematics & Statistics B.S. Degree Program Mission Statement

The mission of the Department of Mathematics and Statistics B.S. Degree Program is to provide rigorous theoretical and practical training for our majors who may choose to 1) become secondary mathematics teachers 2) continue their education in mathematics or statistics at graduate school or 3) pursue a career in business, industry, or government.

M.S. and M.A. Mathematics Education Mission Statement

The mission of the M.S. in Mathematics Education is to provide an opportunity for grades 9-12 teachers to advance their professional development (i.e., deepen and broaden their understanding of mathematical content and issues related to teaching and learning mathematics) by increasing their study of mathematics, education, and mathematics education. The M.A. provides a similar opportunity for K-8 teachers.
Mathematics & Statistics Department Goal Statements

DG1. The Department will offer a variety of high quality courses to meet the mathematical needs of students of all levels and in all majors. The Department will provide support and resources to help ensure the success of all students.

DG2. Since “high quality education” applies to needs outside of the classroom as well as inside, the Department faculty and staff will help students with advising, enrolling, and resolving class conflicts.

DG3. The Department faculty will be active in peer-reviewed publications, grants, and outreach activities.

DG4. Department faculty will serve as consultants as needed, will serve on College and University committees, and will be involved in campus decision-making procedures that relate to Mathematics and Statistics.

M.S. and M.A. Interdisciplinary Studies—Mathematics Education Goals

MS1. The Masters programs will deepen and broaden K12 teachers’ understanding of mathematical content in their respective curricula.

MS2. The Masters programs will develop K12 teachers’ understanding of mathematics education research in relationship to practice; it will also develop and broaden teachers’ understanding of issues related to teaching and learning mathematics at the relevant level.

MS3. The Masters programs will develop K12 teachers’ skill as teacher-leaders in mathematics education at the relevant level.
Program Goals of the B. S. Program in Mathematics & Statistics, and their associated Student Learning Outcomes (SLOs)

1. General Content. Graduates are proficient in performing basic operations on fundamental mathematical objects and have a working knowledge of the mathematical ideas and theories behind these operations.

   GC1 Demonstrate basic skills and conceptual understanding of differential, integral, and multivariable calculus.

   GC2 Demonstrate basic skills and conceptual understanding as relating to fundamental mathematical objects introduced in our degree core, such as, sets, functions, equations, vectors, and matrices.

   GC3 Demonstrate basic understanding of probability and statistics, relevant to their option.

   GC4 Demonstrate more technical skills and more in-depth and broader conceptual understanding in core mathematical areas (such as, analysis, geometry/topology, algebra, applied math, statistics), relevant to their option in the major.

2. Critical Thinking/Problem Solving. Graduates use critical thinking and problem solving skills to analyze and solve mathematical & Statistical problems.

   PS Interpret and translate problems into appropriate mathematical language; then solve problems by applying appropriate strategies and interpreting the results.

3. Communication. Graduates communicate mathematics effectively in a manner appropriate to career goals and the mathematical maturity of the audience.

   COM1 Demonstrate the ability to effectively and accurately write on mathematical topics relevant to their mathematics option and appropriate to their audience.

   COM2 Demonstrate the ability to effectively and accurately speak on mathematical topics relevant to their mathematics option and appropriate to their audience.
4. **Proof Proficiency.** Graduates have a basic proficiency in the comprehension and application of proofs.

   PP Students can read mathematical proofs, extract the key ideas used in the proof, and convey the logic behind the proof; they can also write their own rigorous and logically correct proofs.

5. **Technology.** Graduates know how to use technology tools (e.g., graphing calculators, computer algebra systems) appropriate to the context of the problem.

   TECH Students use technology to manipulate mathematical objects (e.g., functions, equations, data sets, etc.), to conduct mathematical explorations, to model problem scenarios, and to analyze mathematical objects.

6. **Life-long Learner** Graduates are aware of the important role of mathematics and have the interest and ability to be independent learners and practitioners.

   LL1 Students demonstrate the ability to apply mathematics and statistics to new contexts (e.g., in other classes, the workplace, graduate school, or classes they teach).

   LL2 Students recognize and appreciate the role that mathematics can play in their futures and in society in general.
Assessment Plans

The assessment process is the responsibility of our existing Strategic Planning committee and department chair. The committee, driven by the alignment matrix, will identify the goals and SLO’s to be assessed during the year and finalize assessment plans, developing rubrics, course-level embedded assessment, or surveys as needed, and collect, analyze, and summarize the assessment data for the year. The committee and chair will coordinate with the instructors in the courses where assessment will take place and will organize the collection of data from the instructors. The results of the assessment, possibly from previous semesters if it takes place on final exams or late in the semester, will be discussed with the instructors and their feedback will help in identifying the next steps in closing the loop and addressing any curricular changes or future assessment.

The department plans to use a variety of assessment, such as, embedded questions and problems on assignments or in exams, written and oral student presentations, surveys, portfolios (at least for some options), and exit interviews. We hope that the adoption of WebCT Vista will help us coordinate and implement assessment more efficiently at the department level in our large multi-section courses.

Our goals/SLO’s, alignment matrix, and assessment plans are an evolving process. We will continue to get more faculty involvement, especially, in terms of how the assessment points to potential changes in the curriculum or requirements in the options within our major. Our next step is to complete the alignment matrix by developing a long-term plan to have all SLO’s assessed on a rotating 3 – 5 year time frame.