Academic Program
Plan for Assessment of Student Learning Outcomes
College of Arts and Sciences
The University of New Mexico

A. College, Department and Date

1. College: Arts and Science
2. Department: Mathematics and Statistics
3. Date: December, 2024

B. Academic Program of Study*

B.S. Mathematics

C. Contact Person(s) for the Assessment Plan

D. Broad Program Goals & Measurable Student Learning Outcomes

1. Broad Program Learning Goals for this Degree/Certificate Program

A. *Knowledge*: Learn the basic concepts, principles, definitions, theoretical and computational results of mathematics.

B. *Skills:* Learn how to formulate, analyze, and solve problems in mathematics. Learn how to create formal proofs. Acquire oral and written communication skills to convey mathematical ideas and results.

2. List of Student Learning Outcomes (SLOs) for this Degree/Certificate Program

A.1. Calculus: Learn basic definitions, concepts, and fundamental theorems of calculus/analysis.

UNM Goals (_X_ Knowledge ___ Skills ___ Responsibility)

A.2. Algebra: Learn basic definitions, algebraic structures, and fundamental theorems of algebra/linear algebra.

UNM Goals (_X_ Knowledge ___ Skills ___ Responsibility)

* Academic Program of Study is defined as an approved course of study leading to a certificate or degree reflected on a UNM transcript. A graduate-level program of study typically includes a capstone experience (e.g. thesis, dissertation, professional paper or project, comprehensive exam, etc.).

A.3 Numerical computing: Learn how to solve linear and nonlinear equations numerically, interpolation and approximation of functions, techniques for approximate differentiation and integration; numerical solution of differential equations.

UNM Goals (_X_ Knowledge ___ Skills ___ Responsibility)

B.1. Mathematical Reasoning and Writing: Learn how to give precise statements, differentiate between hypotheses and conclusions, construct logical arguments and counterexamples, and recognize generalizations of basic concepts. Learn how to communicate mathematical ideas using precise, logically correct and clear statements.

UNM Goals (___ Knowledge _X_ Skills ___ Responsibility)

B.2. Computation Skills: Learn how to solve mathematical problems analytically and/or numerically.
UNM Goals (___ Knowledge _X_ Skills ___ Responsibility)

E. Assessment of Student Learning Three-Year Plan

1. Timeline for Assessment

Year/Semester	Assessment Activities	SLO #
Year 1, Fall	Math 321	A2, B1
Year 1, Spring	Math 375	A3, B2
Year 2, Fall	Math 401	A1, B1
Year 2, Spring	Math 321	A2, B1
Year 3, Fall	Math 375	A3, B2
Year 3, Spring	Math 401	A1, B1

2. How will learning outcomes be assessed?

Direct Measure:
Instructors will pose questions on final exams that target the course specific SLOs listed above. They will then record the data and submit the report to the Undergraduate Committee and Department Advisor at the end of the semester. The report will include the total number of mathematics majors (either all mathematics majors in class or only those mathematics majors who passed a pretest on prerequisite knowledge and skills – at the discretion of the instructor) as well as the number of those who performed at the acceptable level or better.

Indirect Measure:
The Department Advisor will distribute an exit survey to the graduating mathematics majors. The survey asks the students to self-assess their achievement on selected SLOs and specify their plans after graduation.

Performance Target:
"Acceptable or better" performance by 60% of the tested/surveyed mathematics majors.

3. **What is the unit's process to analyze/interpret assessment data and use results to improve student learning?**

   Each semester, course reports will be prepared by instructors teaching the courses listed in the Table in section E.1 and submitted to the Undergraduate Committee and the Department Advisor. In addition, an exit survey will be distributed to graduating mathematics majors by the Department Advisor who will also collect and store the anonymous responses.

   The past three-year course reports collected from the instructors and the survey data collected from the students, the previous undergraduate program assessment report and the respective official feedback from the College of Arts & Sciences will be forwarded by the Department Advisor to the Undergraduate Committee assigned to do the report over the collected data. The Undergraduate Committee will interpret/summarize the data and submit the report to the provided assessment contact in the College of Arts & Sciences, Department Chair, and Department Advisor. The Undergraduate Committee will also forward the subsequent college feedback to the Department Advisor.

   If the performance target is not met, the Department Chair will discuss avenues for improvement in the assessment mechanisms, curriculum design, and pedagogy with instructors teaching the assessed courses as well as instructors teaching the prerequisite courses.