BA Math, BS Mathematics, and BS Applied Math
Assessment Plan

Developing students who can precisely and creatively problem solve, analyze, construct, communicate in the language of math, and apply these abilities to a diversity of problems is the essential goal of the majors.

Program Learning Objectives

1. Core Knowledge: Students will demonstrate conceptual understanding of the foundational ideas, concepts, and methods of the discipline of mathematics (calculus, linear algebra, differential equations, computational methods)

2. Proofs: Students will learn to read, understand, and construct proofs. They will also learn to appreciate the structure of arguments and the role of assumptions.

3. Subfield Knowledge and Methods: Students will demonstrate conceptual understanding of the ideas and methods of some of the major subfields of mathematics, and be able to apply those ideas and methods in problem solving.

4. Problem Solving and Creativity: Students will demonstrate an ability to solve mathematical problems requiring a combination of ingenuity and technical facility.

5. Communication: Students will learn to communicate mathematically through formal proofs and expository writing for a general audience.

Curriculum structure

*Four foundational courses are completed by all majors: Calculus 1a, Calculus IIa, Multidimensional Calculus, and Linear Algebra with Differential Equations. The foundational courses **introduce** students to the ideas and concepts of calculus, linear algebra, and differential equations; to the ability to read and analyze proofs and the structure of arguments; to computational methods; and to communicating mathematically through formal proofs.*

*Advanced courses chosen by the student with his/ her advisor **reinforce** student knowledge and ability development as well as enable students to develop some degree of **mastery** .*

	Learning objective 1: core knowledge / methods	***Learning objective 2: proofs***	***Learning objective 3: subfield knowledge/ methods***	***Learning objective 4: problem solving/ creativity***	***Learning objective 5: communicate mathematically and in expos. writing***
Foundation courses					
Calculus Ia	*introduce*	*introduce*		*introduce*	
Calculus IIa	*introduce*	*introduce*		*introduce*	
Multidim. Calc.	*introduce*	*introduce*		*reinforce*	*introduce*
Lin.Alg. with DE	*introduce*			*introduce*	
Upper level writing courses (2 W designated courses)					*introduce/ reinforce*
Advanced courses (6 courses)	*reinforce/ mastery*	*reinforce/ mastery*	*reinforce/ mastery*	*reinforce/ mastery*	*reinforce/ mastery*

<u>Assessment Plan</u>

Direct measures of student learning

- The undergraduate committee will work with faculty in foundation and advanced courses in alignment of courses with program learning objectives. Each faculty will work with the undergraduate committee in defining expected course learning objectives.
- Each academic year, the undergraduate committee will choose 1 program learning objective for review. The committee will work with advanced course faculty in selecting exam problems or assignments that demonstrate student mastery for the given program learning objective.
- Selected problems and assignments will be reviewed by advanced course faculty and the undergraduate committee.

- Post-graduation placement in graduate school, or employment as reported in senior survey. (annual)

- Success in professional schools and ultimate job placement as reported in alumni survey. (every 5 years)
- Awards and Scholarships related to mathematics received by students. (annual)

Indirect methods

- High level of satisfaction with overall program, advising, and teaching quality ratings in senior survey (annual)
- High level of ability self-assessment for program learning objectives in senior survey (annual) and alumni surveys (every 5 years)
- Senior focus group review of program quality and learning processes (every other year)

Assessment Data Review

Assessment data will be reviewed annually by the undergraduate curriculum committee.