

### Current Mission Statement:

The mission of St. Ambrose University is to enable all its students to develop intellectually, spiritually, ethically, socially, artistically and physically to enrich their own lives and the lives of others. To assist in that goal, the Department of Mathematical Sciences has the additional mission of providing its majors with the opportunity to develop a deep understanding of the core concepts of mathematics and to prepare them for graduate school or for careers in mathematics, mathematics teaching, or related fields.

### Proposed Mission Statement:

St. Ambrose University enables its students to develop intellectually, spiritually, ethically, socially, artistically and physically to enrich their own lives and the lives of others. To assist in that mission, the Department of Mathematical Sciences **provides all students opportunities to develop mathematical and quantitative skills to model and understand the world and society in which they live. The Department provides its majors with a deep understanding of mathematical concepts and mastery of problem-solving skills to prepare them for immediate employment, graduate/professional schools, or meaningful and enjoyable lives.**

### Current Teaching Objectives:

1. To provide majors with practical and theoretical knowledge of mathematics at an advanced level
2. To provide majors high quality courses that will extend their understanding of mathematics
3. To provide courses in mathematics education consistent with best practices.
4. To develop in our majors the logical skills necessary for creative problem solving, analysis, and research
5. To develop the majors' abilities to write and speak effectively in their discipline

### Proposed Faculty Objectives: (new in bold)

#### General Education Courses

1. **To provide all students with an understanding of the logical structure and style of mathematics appropriate to their discipline.**
2. **To provide all students with an awareness and appreciation of the interconnectedness of mathematical disciplines.**
3. **To provide all students with the skills needed to translate real world situations into mathematical models for exploration.**

#### Math Majors

4. To provide majors high quality, **rigorous** coursework that will extend their practical and theoretical understanding of mathematics.
5. To provide majors **opportunities to master** skills in problem solving, analysis, and research.
6. To provide majors **opportunities** to develop the ability to write and speak effectively in their discipline.

#### Math Education Majors

7. To provide **pre-service teachers** with courses consistent with **state teaching standards, NCTM standards**, and best practices in math education.
8. **To ensure pre-service teachers have mastered the concepts and skills beyond what they will be expected to teach.**
9. **To provide ongoing mentoring and in-service learning opportunities to practicing mathematics teachers.**

#### Professional Development & Student Service

10. **To keep current in our disciplines and to seek and encourage undergraduate research opportunities.**
11. **To assist our students in seeking employment or admissions to graduate programs.**

### Current Learning Objectives for Majors:

After completing the courses required for a major in mathematics at St. Ambrose University, all students will:

1. Understand the concepts and techniques of core subjects: calculus, linear algebra, analysis and statistics.
2. Apply those core concepts and techniques to solve problems
3. Understand the role of proof in mathematics and read/write elementary mathematical proofs
4. Communicate mathematical ideas effectively using proper mathematical terms and notation.

In addition, students majoring in mathematics education will:

5. Demonstrate knowledge of content and pedagogy
6. Design coherent instruction.

### Proposed Learning Objectives for Majors: (new in bold)

**In completing** the requirements for a Major in Mathematics or Mathematics Education at St. Ambrose University, **all students will develop conceptual understanding and problem-solving skills in the following content areas: Calculus, Logic & Proof, Linear Algebra, Probability & Statistics, Differential Equations, Analysis, and Abstract Algebra.**

#### **All majors will also:**

1. Apply their conceptual understanding and problem-solving skills to model and solve a variety of problems.
2. **Recognize and appreciate the interconnectedness of various fields of mathematics.**
3. Read and write elementary mathematical proofs.
4. **Locate, read, and assimilate technical material.**
5. Effectively communicate mathematical ideas and solutions using proper terms and notation.
6. **Access and utilize relevant resources when solving problems.**
7. **Transfer their logic, analysis, and creativity in applying mathematics content to other disciplines.**
8. **Develop an appreciation for the career and educational opportunities for mathematics majors.**  
(maybe something about working with axiomatic systems)

#### **Mathematics majors will also:**

1. Develop conceptual understanding and problem-solving skills in Differential Equations, Analysis, and Abstract Algebra.
2. **Produce concise and rigorous mathematical proofs and evaluate the completeness and correctness of proofs.**

#### **Pre-service teachers will also:**

1. **Demonstrate knowledge of current local, state, and national mathematics standards/curriculum**
2. **Demonstrate skills in planning, delivering, and evaluating instruction**
3. **Locate, consume, and evaluate research in mathematics education**
4. **Demonstrate skills in evaluating student learning in mathematics.**