

# MATHEMATICS TEACHING BS

## Mathematics Teaching

College of Science, Engineering & Technology  
Department of Mathematics and Statistics  
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Website: [www.cset.mnsu.edu/dept/mathstat/](http://www.cset.mnsu.edu/dept/mathstat/)

Chair: Ruijun Zhao, PhD

Faculty: Jonathan Harper, PhD; In-Jae Kim, PhD; Namyong Lee, PhD; Hyekyung Min, PhD; Galkande Premaratna, PhD; Mezbahur Rahman, PhD; Brandon Rowekamp, PhD; Deepak Sanjel, PhD; Soo Yeon Shin, PhD; Dan Singer, PhD; Yea-Ling Tsao, PhD; Han Wu, PhD; Hongxia Yin, PhD; Ke Zhu, PhD; Mark Zuiker, PhD

Mathematics in its purest form is an art concerned with ideas. The Department of Mathematics believes that an undergraduate major should be both an introduction to more advanced study and a survey of the many facets of mathematics. From the profound insights of Thales to the undecidability of Godel, from the intuitive to the rigorous, from the abstract to the applied, with a solid emphasis on both the discrete and the continuous cases, the department expects all majors to be engaged in a wide range of mathematical ideas.

Unlike many other disciplines, mathematics is a very structured subject. Consequently, the curriculum consists of sequences of interrelated courses which must be taken in the appropriate order. The department expects that the well prepared student will complete the mathematics major in four years.

The Department offers three mathematics majors and two minors. The primary focus of the B.S. Mathematics Teaching program is to prepare students to teach mathematics at the middle and secondary levels. The B.A. Mathematics and B.S. Mathematics programs are intended to prepare students for advanced study in mathematics or to work in business, industry, or government. The mathematics minor is intended for non-mathematics majors who desire a stronger background in mathematics. The Actuarial Science Minor combines finance, statistics, and mathematics to analyze risk and ensure financial security for individuals, corporations and society at large.

**Academic Map/Degree Plan at [www.mnsu.edu/programs/#All](http://www.mnsu.edu/programs/#All)**

### POLICIES/INFORMATION

**Admission to Major** is required to enroll in 300 and 400 level courses. Admission is granted by the Department. Admission requirements are:

- A minimum of 32 earned semester credit hours and a 2.0 minimum cumulative GPA
- Completion of 8 credits of mathematics in courses numbered MATH 121 or higher
- A minimum 2.5 cumulative GPA in mathematics courses.

Contact the College of Science, Engineering and Technology Student Relations Office for application procedures.

**Accelerated Combined Degree (BS and MA/MS) Program.** Students intending to complete their Bachelor's and Master's degree at Minnesota State Mankato may be granted permission to take classes that count toward their graduate program during their undergraduate studies. Admission to the program is conducted through the department. Upon being accepted, students will be assigned an advisor to aid in the design of an accelerated program of study (generally 5 years). Students must maintain a minimum 3.0 GPA overall and a 3.6 in major (as an undergraduate) to continue in the program. Please contact the Department Graduate Coordinator for detailed information.

**Course Application Policy.** Within each major or minor, no course may be applied to more than one requirement.

**Residency Policy.** At least 3 credits applied to the mathematics minor must be earned at Minnesota State Mankato.

**GPA Policy.** Mathematics majors or minors must earn a grade of "C" (2.0) or better in all courses taken for grade that are applied to the major or minor, respectively.

**P/N Grading Policy.** Not more than one-fourth of the credits in mathematics courses numbered MATH 121 or above can be taken under P/N and applied to a major or minor. All 300 and 400 level courses are offered for grade only with the exception of MATH 487, MATH 498, and MATH 499, which are available for both P/N and letter grade.

**Credit by Examination.** Credit by examination will not be approved for courses in which a student has already received a grade.

**Credit Limitations.** A student may accumulate a maximum of six credits from MATH 110 and the College Level Examination Program (CLEP). After completing MATH 122 with a grade of "C" or better, a student may not receive credit for MATH 110, MATH 112, MATH 113, MATH 115, or MATH 180 without the consent of the department. Since the following courses have some common content, credit is not allowed for both MATH 115 and either MATH 112 or MATH 113. A student may not receive credit for MATH 354 or STAT 354 after completing MATH 455 or STAT 455.

Students seeking enrollment in MATH 112 College Algebra, MATH 113 Trigonometry, MATH 115 Precalculus, MATH 121 Calculus I, MATH 130 Finite Mathematics and Introductory Calculus, MATH 201 Elements of Mathematics I, or STAT 154 Elementary Statistics must demonstrate readiness to succeed by satisfying the placement table below.

Course	Minimum ACT/SAT Math Subscore	Minimum Accuplacer Intermediate Algebra Score	Minimum Accuplacer College Level Math Score	Minimum Accuplacer Calculus Readiness Score	Course Prerequisites
<b>Math 112</b>	ACT 22, Old SAT 520, New SAT* 550, 2-digit SAT 27.5** MCA 1158	OR 60	N/A	N/A	OR Grade of P in MATH 098
<b>Math 113</b>	ACT 22, Old SAT 520, New SAT* 550, 2-digit SAT 27.5**	OR 60	AND 84	N/A	OR Math 112 with "C" or better
<b>Math 115</b>	ACT 23, Old SAT 530, New SAT* 560, 2-digit SAT 28**	OR 60	AND 96	N/A	OR Grade of P in MATH 098
<b>Math 121</b>	ACT 24, Old SAT 560, New SAT* 580, 2-digit SAT 29**	OR 60	AND 84	AND 21	OR MATH 115, or both MATH 112 and MATH 113 with a "C" (2.0) or better
<b>Math 130</b>	ACT 23, Old SAT 530, New SAT* 560, 2-digit SAT 28**	OR 60	AND 84	N/A	OR MATH 112 or MATH 115 with a "C" (2.0) or better
<b>Math 181</b>	ACT 23, Old SAT 530, New SAT* 560, 2-digit SAT 28**	OR 60	AND 84	N/A	OR MATH 112 or MATH 115 with a "C" (2.0) or better
<b>Math 201</b>	ACT 22, Old SAT 520, New SAT* 550, 2-digit SAT 27.5** MCA 1148	OR 60	N/A	N/A	OR Grade of P in Math 098 or "C" (2.0) or better in MATH 112, MATH 115, or MATH 12
<b>Stat 154</b>	ACT 19, Old SAT 460, New SAT* 500, 2-digit SAT 25** MCA 1148	OR 60	N/A	N/A	OR Grade of P in Math 098, or "C" (2.0) or better in Math 112, Math 115, or Math 121

\*New SAT is June 2016 or later

\*\*Two digit SAT score is also called the SAT Math Composite Score  
ACT, SAT, and MCA scores are valid for 5 years

**Procedures:** Students may substitute for the above requirements based on documentation of:

1. equivalent or higher scores on standardized college admissions tests that report a separate mathematics sub-score within two calendar years;
2. successful completion of equivalent prior post-secondary education, such as course transfer evaluations or Cambridge International Examinations; or
3. enrollment exclusively in non-credit courses or programs.

Students requesting such substitutions should submit the documentation to the Chair of the Department of Mathematics and Statistics for evaluation. The evaluation will be based on nationally accepted concordances between the testing instruments and/or courses. The Chair of the Department of Mathematics and Statistics or designee should respond in writing to student requests within three weeks of receiving them.

### Procedure for Waiver

1. Students not meeting the requirements for enrollment in Math 112, Math 201 or Stat 154 may request a waiver to this policy.
2. Written requests for waivers to the policy must be submitted to the Chair of the Department of Mathematics and Statistics, and should include evidence of alternate means of demonstrating readiness for college algebra including but not limited to:
  - a. High school or recent post-secondary coursework which would indicate adequate preparation (transcripts or other records which include course titles, levels and grades are acceptable), or
  - b. Verification of extenuating circumstances which may have affected performance on previous exams.
3. Requests for waivers should be submitted by the following deadlines:
  - a. August 5th for fall semester enrollment,
  - b. December 1st for spring semester enrollment, and
  - c. May 1st for summer session enrollment.
4. The Chair of the Department of Mathematics and Statistics or designee should respond in writing to student requests within three weeks of receiving them.
5. Students whose initial requests are denied may submit a written appeal to the Dean of the College of Science, Engineering and Technology. The Dean should respond in writing, with a copy to the Chair of the Department of Mathematics and Statistics.
6. The Dean's decision is the final step in this appeal process.

**Policy Rationale:** The purpose of the policy is to place students in a course that is developmentally appropriate to help ensure their long term success. Data suggests students not meeting these guidelines have a higher likelihood of having to repeat a course.

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### MATH BS TEACHING

Degree completion = 120 credits

#### Required for General Education

HLTH 240 Drug Education (3)  
MATH 121 Calculus I (4)

#### Major Common Core

MATH 122 Calculus II (4)  
MATH 223 Calculus III (4)  
MATH 247 Linear Algebra I (4)  
MATH 290 Foundations of Mathematics (4)  
MATH 316 Intermediate Analysis (3)  
MATH 332 College Geometry (4)  
MATH 345 Abstract Algebra I (4)  
MATH 354 Concepts of Probability and Statistics (4)  
MATH 375 Introduction to Discrete Mathematics (4)  
MATH 483 Advanced Viewpoint of 5-8 School Mathematics (3)  
MATH 484 Technology in 5-12 School Mathematics (3)  
MATH 485 Teaching Secondary School Mathematics (3)  
MATH 492 Mathematics Capstone Experience (3) **OR**  
MATH 492W Mathematics Capstone Experience (3)

#### Other Graduation Requirements

See the SECONDARY EDUCATION section for admission requirements to Professional Education and a list of required professional education courses.

**Required Minor:** No.

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### COURSE DESCRIPTIONS SEE MATHEMATICS