Augustana College

Mathematics

Courses required for the first year: *MATH 160 or any necessary prerequisites for MATH 160*
Courses recommended for the first year: *MATH 160, MATH 250*
Contact: *Dr. Stacey Rodman, Department Chair* *staceyrodman@augustana.edu*

The Major in Mathematics

It is recommended that the student complete MATH 160 Calculus and MATH 250 Discrete Mathematics in the first year to allow for flexibility in scheduling. It is strongly recommended that the student, at minimum, complete MATH 160 Calculus the first year. A student must complete MATH 160 Calculus no later than Fall term of the second year to graduate in four years.

If a student has credit for MATH 160, then MATH 260 Multivariable Calculus is recommended for Fall term first year.

A student places into Calculus (MATH 160) if at least one of the following criteria is met:
- Student's MIS* score is 920 or better AND the student has completed a pre-calculus course with a grade of B or better
- Student completed MATH 140 with a grade of C or better
- Student has transfer credit for a pre-calculus course
- Student's MIS* score is between 840 and 920, the student completed a pre-calculus course with a grade of B or better, and the student completed Augustana's ALEKS Prep for Calculus course

A student places into Pre-Calculus (MATH 140) if at least one of the following criteria is met:
- Student's MIS* score is 840 or above
- Student completed MATH 090 with a grade of A
- Student has transfer credit for a college algebra course
- Student completed Augustana's ALEKS Prep for Pre-Calculus course

A student places into Preparation for College Mathematics (MATH 090) if ALL of the following criteria are met:
- Student's MIS is below 840
- Student is a first year incoming student in fall term
- Student's intended major field of study requires that they take Pre-Calculus (MATH 140)
Note that MATH 090 is only offered fall term.

*A student's Math Index Score (MIS) is calculated using the student's high school GPA and their math sub-score on the ACT or SAT exam. More information about MIS scores and ALEKS can be found at https://www.augustana.edu/academics/aleks

A major in mathematics is a minimum of 34 credits, including 160, 250, 260, 350, 410, 450, 490, and two electives at least one of which must be at 300-400 level.

A grade of C or better is required for each prerequisite course.

Required Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
MATH 160	Calculus		MIS placement or MATH 140	4
MATH 250	Discrete Mathematics		MATH 160	4
MATH 260	Multivariable Calculus		MATH 160	4
MATH 350	Linear Algebra		MATH 250	4
MATH 410	Real Analysis		MATH 350	4
MATH 450	Algebraic Structures		MATH 350	4
MATH 490	Senior Inquiry: Mathematics		MATH 410 & MATH 450	4
Two electives, at least one of which must be at 300-400 level (choices listed in the next chart)				

Additional Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
MATH 220	Integration: Techniques and Applications		MATH 160	2
MATH 230	Infinite Series: Techniques and Applications		MATH 160	2
MATH 310	Introduction to Cryptography		MATH 250, CSC 201	4
MATH 320	Differential Equations		MATH 220	4
MATH 330	Probability and Statistics		MATH 250	4
MATH 340	Mathematical Modeling		MATH 340, CSC 201	4
MATH 360	Complex Variables		MATH 260	4
MATH 430	Advanced Statistics		MATH 330	4
MATH 440	Numerical Methods		MATH 230, CSC 201	4
MATH 470	Foundations of Geometry	PH	MATH 350	4
MATH 480	Advanced Topics		permission of instructor	4

The Minor in Mathematics

A minor in mathematics is 20 credits, including 160, 250, 350 and two electives at least one of which must be at the 300-400 level.

A grade of C or better is required for each prerequisite course.

Required Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
MATH 160	Calculus		MIS placement or MATH 140	4
MATH 250	Discrete Mathematics		MATH 160	4
MATH 350	Linear Algebra		MATH 250	4
two electives at least one of which must be at the 300-400 level (choices listed in the next chart)				

Additional Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
MATH 220	Integration: Techniques and Applications		MATH 160	2
MATH 230	Infinite Series: Techniques and Applications		MATH 160	2
MATH 310	Introduction to Cryptography		MATH 250, CSC 201	4
MATH 320	Differential Equations		MATH 220	4
MATH 330	Probability and Statistics		MATH 250	4
MATH 340	Mathematical Modeling		MATH 340, CSC 201	4
MATH 360	Complex Variables		MATH 260	4
MATH 410	Real Analysis		MATH 350	4
MATH 430	Advanced Statistics		MATH 330	4
MATH 440	Numerical Methods		MATH 230, CSC 201	4
MATH 450	Algebraic Structures		MATH 350	4
MATH 470	Foundations of Geometry	PH	MATH 350	4
MATH 480	Advanced Topics		permission of instructor	4

Major Overview

Any mathematics student with a long for problem solving can look forward to a fulfilling career. The skills you develop while studying mathematics are in high demand, and there is not shortage of interesting jobs that will use your analytical, problem-solving, and logic skills. Here are some careers a math student can consider:

Biostatisticians solve biological problems, particularly in healthcare. A biostatistician can study the effectiveness of new drugs, or identify the source of an outbreak using data and mathematical modeling.

Biostatisticians can also work in ecology to predict how ecosystems will change or in agriculture, helping farmers choose which crops to grow and which methods will be most effective.

Actuaries assess and minimize risk. They model outcomes for different scenarios, often for insurance companies. If you're not interested in working in insurance, large businesses and startups also hire actuaries to help executives determine what risks to take.

Logisticians develop plans to maintain and repair equipment. They work to improve efficiency and reduce downtime by tracking the state of the equipment and planning preventative maintenance to avoid repairs.

Data Scientists research problems and model solutions for everything from data security to the production of semiconductors. They often work with other scientists such as chemists and physicists to develop solutions.

Financial Analysts study trends in financial markets. Most work for businesses and help them make economic choices. The Federal Reserve System also hires financial analysts to assist in making decisions about monetary policy.

Market Research Analysts forecast sales trends and gather data on consumers. They develop and track marketing campaigns to find the most effective strategies to maximize sales.

Technical Writers create technical documents like owner's manuals, detail technical procedures, and instructions on how to put together economical Swedish furniture using only a hex key. Technical writers can also write journal articles, grant proposals, and government reports.

https://mathcareers.maa.org/7-stem-jobs-math-majors

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