MATHEMATICS (BS)

Exploration and Discovery

The mathematics major delivers a balanced survey of classical and modern math. Computational courses begin with calculus and culminate in mathematical and statistical modeling. Theoretical courses begin with proof writing and culminate in abstract algebra and real analysis. Collaboration, communication, and perseverance are emphasized throughout the major. Upon completion of the program, students are prepared for a large variety of careers, as they are trained creative problem solvers.

Degree Requirements

Course	Title	Credits
Major Requirements		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
MA 2560	Calculus II (QRCO)	4
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 3500	Probability and Statistics for Scientists	3
MA 3540	Calculus III	4
MA 3600	Differential Equations with Linear Algebra	4
MA 4110	Mathematical Expositions	3
MA 4140	Abstract Algebra (WRCO)	3
MA 4510	Introduction to Analysis	3
Mathematics Electives: Additional Mathematics Courses at 3000 or higher (minimum 6 credits)		
Computer Science Electives - Complete two courses:		5-7
CS 2010	Computing Fundamentals (TECO)	
CS 2370	Introduction to Programming	
CS 2400	Scientific Programming	
CS 2470	Systems Programming in C/C++	
General Education (https://coursecatalog.plymouth.edu/general-education/)		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI)	Creative Thought Direction	3-4
PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI)	Past and Present Direction	3-4
SIDI (https://coursecatalog.plymouth.edu/general-education/#SIDI)	Scientific Inquiry Direction	3-4
SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI)	Self and Society Direction	3-4
Directions (choose from CTDI, PPDI, SIDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/) [1]		4-8
DICO (https://coursecatalog.plymouth.edu/general-education/#DICO)	Diversity Connection	3-4
GACO (https://coursecatalog.plymouth.edu/general-education/#GACO)	Global Awareness Connection	3-4
INCP (https://coursecatalog.plymouth.edu/general-education/#INCP)	Integrated Capstone	3-4
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
Electives		28-34
Total Credits		**120**

[1] Directions should total 20 credits (unless the major has a waiver for a specific Direction).

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

BS Mathematics

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI)	Creative Thought Direction	3-4
	Credits	**15-16**
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3

MA 2560 or MA 2550	Calculus II (QRCO) or Calculus I (QRCO)	4
EN 1400	Composition	4
PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI)	Past and Present Direction	3-4
	Credits	**14-15**
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
SSDI (https://coursecatalog.plymou general-education/#SSDI)	Self and Society Direction	3-4
DICO (https://coursecatalog.plymouth.edu/general-education/#DICO)	Diversity Connection	3-4
Elective		3
	Credits	**13-15**
Spring		
MA 3540	Calculus III	4
Computer Science Elective		3
SIDI (https://coursecatalog.plymou general-education/#SIDI)	Scientific Inquiry Direction	3-4
Elective		3-4
	Credits	**13-15**
Year Three		
Fall		
MA 3500	Probability and Statistics for Scientists	3
MA 3355	Introduction to Mathematical Modeling (TECO)	4
Directions (choose from CTDI, PPDI, SIDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		4-8
Computer Science Elective		3
Elective		3-4
	Credits	**17-22**
Spring		
MA 4140	Abstract Algebra (WRCO)	3
Upper Level Mathematics Elective		3-4
GACO (https://coursecatalog.plymouth.edu/general-education/#GACO)	Global Awareness Connection	3-4
Electives		3-4
	Credits	**12-15**
Year Four		
Fall		
MA 4510	Introduction to Analysis	3
INCP (https://coursecatalog.plymouth.edu/general-education/#INCP)	Integrated Capstone	3-4
Electives		9
	Credits	**15-16**
Spring		
MA 4110	Mathematical Expositions	3
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
Electives		9-10
Upper Level Mathematics Elective		3-4
	Credits	**18-21**
	Total Credits	**120**

[1] Required for the Option
[2] Directions should total 20 credits (unless the major has a waiver for a specific Direction).

Learning Outcomes

- The ability to communicate mathematics.
- Facility with technology.
- The ability to understand proofs.
- The understanding of mathematical structures, their properties, and their applications.
- Knowledge of the historical and cultural development of mathematical systems.

Career Pathways

A major in mathematics is a good preparation for a variety of careers, especially careers that require the ability to reason carefully and express oneself clearly. Many mathematicians have job titles that do not directly reference the relevant math skills (see list below). Plymouth State's mathematics program provides student with sufficient background in theory and practice so they may pursue graduate work, research, teaching in the secondary schools, and various types of industry.

Sample Jobs include, but are not limited to: Mathematical Scientist, Actuary, Teacher, Engineer, Game Designer, Supply Chain Analyst, Retirement Plan Designer, Numerical Analyst, Financial Planner, Data Base Manager, Cryptologist, Forensic Analyst, Computer Research Scientist, Physician, Information Scientist, Bioinformatician, Quality Control Analyst, Economist, Information Systems Analyst, Robotics Engineer, Cost Estimator, Epidemiologist, Software Engineer, Risk Analyst, Claims Specialist, Controller, Quantitative Pharmacologist, Forecast Analyst, Environmental Scientist, Data Engineer, Auditor, Budget Analyst, Systems Modeler, Methods Developer, Scientific Consultant, Underwriter, Geomagnetic Engineer, Forest/Fisheries Scientist, Mathematical Biologist, Modeler

See the U.S. Department of Labor Outlook for a complete list.

Useful Skills for Jobs in the Mathematics Fields:

- Accuracy and attention to detail
- Proficiency in analytical reasoning

- Ability to analyze problems and make appropriate decisions
- Ability to organize and memorize detailed information
- Strong organization skills