

# MATHEMATICS, MINOR (SCIENCE)

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

## Program Description

The minor is designed to provide students with an interest in mathematics an opportunity to study a broad range of mathematical topics. The requirements allow students a great deal of flexibility in choosing courses of interest.

## What is Mathematics?

The study of mathematics emphasizes careful problem analysis, precision of thought and expression, and the development of mathematical skills needed for work in many other areas. Theoretical mathematicians increase basic knowledge in "pure" fields like abstract algebra, analysis, or topology. Applied mathematicians use tools growing out of calculus, analysis, computing, statistics, and operations research to solve problems in science, industry, government, and other areas.

## You Might Like This Program If...

- You like mathematics, like to think, like a challenge, and like to know why things are true.
- You want to develop strong problem-solving skills, comprehension of abstract concepts, and creative thinking ability.

## Program Requirements

Requirement	Credits
Requirements for the Minor	26-28

## Requirements for the Minor

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10>). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Code	Title	Credits
<b>Prescribed Courses</b>		
<i>Prescribed Courses: Require a grade of C or better</i>		
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
<b>Additional Courses</b>		
<i>Additional Courses: Require a grade of C or better</i>		
Select 6-8 credits of the following:		6-8
MATH 220	Matrices	
MATH 230	Calculus and Vector Analysis	
MATH 231	Calculus of Several Variables	
MATH 232	Integral Vector Calculus	
MATH 250	Ordinary Differential Equations	
MATH 251	Ordinary and Partial Differential Equations	
MATH 310	Elementary Combinatorics	

MATH 311W Concepts of Discrete Mathematics

MATH 312 Concepts of Real Analysis

### Supporting Courses and Related Areas

*Supporting Courses and Related Areas: Require a grade of C or better*

Select 12 credits of 400-level MATH courses 12

## Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

## University Park

### Undergraduate Mathematics Office

**Academic Advising**  
104 McAllister Building  
University Park, PA 16802  
814-865-7528  
[undergrad@math.psu.edu](mailto:undergrad@math.psu.edu)

## Altoona

**Michael D. Weiner**  
Associate Professor of Mathematics  
Hawthorn Building 115  
3000 Ivyside Park  
Altoona, PA 16601  
814-949-5558  
[mdw8@psu.edu](mailto:mdw8@psu.edu)

## Harrisburg

**Thang Bui, Ph.D.**  
Program Chair  
Olmsted Building, W255a  
Middletown, PA 17057  
717-948-6088  
[flv@psu.edu](mailto:flv@psu.edu)

## Contact

### University Park

DEPARTMENT OF MATHEMATICS  
104 McAllister Building  
University Park, PA 16802  
814-865-7528  
[undergrad@math.psu.edu](mailto:undergrad@math.psu.edu)

<http://math.psu.edu/>

## **Altoona**

DIVISION OF MATHEMATICS AND NATURAL SCIENCES

Hawthorn Building 115

3000 Ivyside Park

Altoona, PA 16601

814-949-5558

mdw8@psu.edu

<http://altoona.psu.edu/academics/bachelors-degrees/mathematics/request-information> (<http://altoona.psu.edu/academics/bachelors-degrees/mathematics/request-information/>)

## **Harrisburg**

SCHOOL OF SCIENCE, ENGINEERING, AND TECHNOLOGY

Olmsted Building, W255

Middletown, PA 17057

717-948-6081

jmb84@psu.edu

<http://harrisburg.psu.edu/science-engineering-technology/computer-science-and-mathematics/minor-in-mathematics> (<http://harrisburg.psu.edu/science-engineering-technology/computer-science-and-mathematics/minor-in-mathematics/>)