

MATHEMATICS (B.A.)

Bachelor of Arts Program

Program Code: BA-AS

Major Code: MAT

Mathematics Department

SAMC 159

(716) 878-5621

mathematics.buffalostate.edu/ (<http://mathematics.buffalostate.edu/>)

Pure mathematics studies the basic concepts and structures that underlie all of mathematics. Traditionally, pure mathematics has been classified into two general fields: analysis and algebra. Analysis deals with the continuous aspects of mathematics and algebra is concerned with sets of objects and operations on these objects. Our undergraduate program is designed so that students will become familiar with each of these fields. Students may also explore other topics such as logic, number theory, and subjects within applied mathematics.

Admission Requirements

High school mathematics through Algebra 2 / Trigonometry

Regents is recommended.

Program Requirements

Code	Title	Credit Hours
General Education 23 Requirements (http://ecatalog.buffalostate.edu/undergraduate/collegewide-degree-requirements-baccalaureate-degrees/#IF_Courses)		
33 credit hours		33
Mathematics Major Requirements (51 credit hours)		
<i>Required Courses (39 credit hours)</i>		
MAT 161	CALCULUS I	4
MAT 162	CALCULUS II	4
MAT 163	USING TECHNOLOGY TO EXPLORE CALCULUS I	1
MAT 164	USING TECHNOLOGY TO EXPLORE CALCULUS II	1
MAT 202	INTRODUCTION TO LINEAR ALGEBRA	3
MAT 263	CALCULUS III	4
MAT 264	USING TECHNOLOGY TO EXPLORE CALCULUS III	1
MAT 270	DISCRETE MATHEMATICS	3
MAT 300	TECHNIQUES OF PROOF	3

MAT 301	INTRODUCTION TO GROUP THEORY	3
MAT 381	PROBABILITY THEORY	3
MAT 411	COMPLEX VARIABLES	3
MAT 417	INTRODUCTION TO REAL ANALYSIS I	3
MAT 491	CAPSTONE RESEARCH IN MATHEMATICS	3

Electives Selected by Advisement (12 credit hours)

Select four from the following: 12

MAT 302	ABSTRACT ALGEBRA II	
MAT 309	COMBINATORICS	
MAT 315	DIFFERENTIAL EQUATIONS	
MAT 316	INTERMEDIATE DIFFERENTIAL EQUATIONS	
MAT 351	ELEMENTARY THEORY OF NUMBERS	
MAT 370	APPLIED NETWORKS	
MAT 382	TOPICS IN MATHEMATICAL STATISTICS	
MAT 383	APPLIED STATISTICS I	
MAT 401	INTRODUCTION TO COMPUTABILITY	
MAT 404	APPLICATIONS OF LINEAR ALGEBRA	
MAT 418	INTRODUCTION TO REAL ANALYSIS II	
MAT 430	SET THEORY	
MAT 431	MATHEMATICAL LOGIC	
MAT 461	NUMERICAL ANALYSIS	
MAT 471	INTRODUCTION TO TOPOLOGY	
MAT 481	STOCHASTIC PROCESSES	
MAT 484	APPLIED STATISTICS II	
MAT 490	SEMINAR	
MAT 495	SPECIAL PROJECT	
MAT 499	INDEPENDENT STUDY	

All College Electives

36 36

Total Credit Hours 120

Students will:

1. master a rich and diverse set of mathematical ideas and techniques from across the core courses of single and multivariable calculus, discrete mathematics, linear algebra, probability, modern algebra, and real and complex analysis.

2. understand the nature of proof and construct well-structured and valid mathematical arguments.
3. choose appropriate mathematical approaches for analyzing new situations and solving multi-step and open-ended problems.
4. communicate their mathematical ideas and results, both orally and in writing, with clarity and precision.
5. use appropriate technology.