MATHEMATICS—APPLIED (B.S.)

Bachelor of Science Program
Program Code: BS-AS
Major Code: AMT

Mathematics Department
SAMC 159
(716) 878-5621
mathematics.buffalostate.edu/ (http://mathematics.buffalostate.edu/)

The applied mathematics B.S. program is directed toward a career goal for computer- and mathematics-related government, industrial, or business employment. It may also provide a basis for entry into graduate school in mathematics, applied mathematics, computer science, or other related disciplines.

Admission Requirements

Four years of college preparatory mathematics 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 (54 credit hours)		
Required Courses (36 credit hours)		
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 241	COMPUTATIONAL TOOLS FOR APPLIED MATHEMATICIANS I	3
MAT 263	CALCULUS III	4
MAT 264	USING TECHNOLOGY TO EXPLORE CALCULUS III	1
MAT 270	DISCRETE MATHEMATICS	3
MAT 315	DIFFERENTIAL EQUATIONS	3
MAT 381	PROBABILITY THEORY	3
MAT 382	TOPICS IN MATHEMATICAL STATISTICS	3
AMT 495	APPLIED MATHEMATICS PROJECT	3
Concentration Selected by Advisement (18 credit hours)		*18*
All College Electives		
33 credit hours		33
Total Credit Hours		**120**

Concentration in Statistical Modeling

Code	Title	Credit Hours
Required Courses (9 credit hours)		
MAT 383	APPLIED STATISTICS I	3
MAT 481	STOCHASTIC PROCESSES	3
MAT 484	APPLIED STATISTICS II	3
Electives (9 credit hours)		9
MAT 300	TECHNIQUES OF PROOF	
MAT 316	INTERMEDIATE DIFFERENTIAL EQUATIONS	
MAT 318	MATHEMATICAL MODELING	
MAT 319	MATHEMATICAL BIOLOGY	
MAT 366	COMPUTATIONAL TOOLS FOR APPLIED MATHEMATICIANS II	
MAT 370	APPLIED NETWORKS	
MAT 390	INTRODUCTION TO OPERATIONS RESEARCH	
MAT 404	APPLICATIONS OF LINEAR ALGEBRA	
MAT 411	COMPLEX VARIABLES	
MAT 417	INTRODUCTION TO REAL ANALYSIS I	
MAT 461	NUMERICAL ANALYSIS	
MAT 486	MODELS AND METHODS OF ACTUARIAL MATHEMATICS	
MAT 490	SEMINAR	
MAT 499	INDEPENDENT STUDY	
Total Credit Hours		**18**

Concentration in Analytical and Computational Modeling

Code	Title	Credit Hours
Required Courses (9 credit hours)		
MAT 316	INTERMEDIATE DIFFERENTIAL EQUATIONS	3

MAT 390	INTRODUCTION TO OPERATIONS RESEARCH	3
MAT 461	NUMERICAL ANALYSIS	3
Electives (9 credit hours)		9
MAT 300	TECHNIQUES OF PROOF	
MAT 318	MATHEMATICAL MODELING	
MAT 319	MATHEMATICAL BIOLOGY	
MAT 366	COMPUTATIONAL TOOLS FOR APPLIED MATHEMATICIANS II	
MAT 370	APPLIED NETWORKS	
MAT 383	APPLIED STATISTICS I	
MAT 404	APPLICATIONS OF LINEAR ALGEBRA	
MAT 411	COMPLEX VARIABLES	
MAT 417	INTRODUCTION TO REAL ANALYSIS I	
MAT 481	STOCHASTIC PROCESSES	
MAT 484	APPLIED STATISTICS II	
MAT 486	MODELS AND METHODS OF ACTUARIAL MATHEMATICS	
MAT 490	SEMINAR	
MAT 499	INDEPENDENT STUDY	
Total Credit Hours		**18**

Concentration in Biological and Actuarial Modeling

Code	Title	Credit Hours
Required Courses (9 credit hours)		
MAT 318	MATHEMATICAL MODELING	3
MAT 319	MATHEMATICAL BIOLOGY	3
MAT 486	MODELS AND METHODS OF ACTUARIAL MATHEMATICS	3
Electives (9 credit hours)		9
MAT 300	TECHNIQUES OF PROOF	
MAT 316	INTERMEDIATE DIFFERENTIAL EQUATIONS	
MAT 366	COMPUTATIONAL TOOLS FOR APPLIED MATHEMATICIANS II	
MAT 370	APPLIED NETWORKS	
MAT 383	APPLIED STATISTICS I	
MAT 390	INTRODUCTION TO OPERATIONS RESEARCH	
MAT 404	APPLICATIONS OF LINEAR ALGEBRA	
MAT 411	COMPLEX VARIABLES	
MAT 417	INTRODUCTION TO REAL ANALYSIS I	
MAT 461	NUMERICAL ANALYSIS	
MAT 481	STOCHASTIC PROCESSES	
MAT 484	APPLIED STATISTICS II	
MAT 490	SEMINAR	1-3
MAT 499	INDEPENDENT STUDY	
Total Credit Hours		**19-21**

Students will:

1. master the subject matter, which includes mastery of mathematical ideas as well as techniques.

2. understand the nature of quantitative and qualitative reasoning.

3. master computer tools to experiment with mathematical concepts, implement mathematical models and analyze data.

4. communicate their mathematical ideas and results, both orally and in writing, with clarity and precision, to experts as well as to non-experts in the field.

5. be able to relate mathematical ideas and techniques to other disciplines.