

Mathematics — Applied

John Ong, Coordinator

Applied mathematics explores the connections between mathematics and the physical world and uses mathematics in studying and solving real-world problems. In this interdisciplinary major, students learn the techniques of modeling, analysis, computing, simulation and data manipulation as applied to their area of interest, such as engineering, biology, chemistry, physics, or economics. Students can pursue a BS with a major in applied mathematics in three different ways, either at the university (Option A with a minor or Option C Statistics Emphasis) or through the MBU-UVA cooperative program in Engineering (Option B).

Department: Mathematics & Applied Mathematics

Type: Major

Requirements for the Bachelor of Science in Applied Mathematics (Option A)

The four-year program in Applied Mathematics (Option A)

Students who are interested in the intersection of mathematics with another discipline at the university should choose this option.

A minor in a discipline of interest. (Common disciplines include Biology, Chemistry, Physics, Business, Economics, Sociology, Philosophy, and Art and Literature, although most disciplines are possible.)

Note: MATH 401 in this applied mathematics program consists of an in-depth study of mathematics in the student's chosen minor. The committee formed for evaluating the student's senior project must include both the mathematics faculty and a member of the faculty from the minor discipline.

Item #	Title	Credits
MATH 211	INTRO CALC/ANALYTIC GEOMETRY I (Q)	4
MATH 212	INTRO CALC/ANALYTIC GEOMETRY II (Q)	4
MATH 231	DISCRETE MATHEMATICAL STRUCTURES(Q)	3
MATH 233	STATISTICAL METHODS & THEORY I (Q)	3
MATH 250	MATHEMATICS AND PROGRAMMING (Q)	3
MATH 301	MULTIVARIABLE CALCULUS I (Q)	3
MATH 302	MULTIVARIABLE CALCULUS II (Q)	3
MATH 304	NUMERICAL ANALYSIS & COMPUTING (Q)	3
MATH 306	ORDINARY DIFFERENTIAL EQUATIONS (Q)	3
MATH 322	LINEAR ALGEBRA (Q)	3
MATH 401	SENIOR SEMINAR (M)	3
PHYS 201	GENERAL PHYSICS I (NQ)	4
PHYS 202	GENERAL PHYSICS II	4
	MATH 396 or MATH 398	3

Requirements for the Bachelor of Science in Applied Mathematics (Option B)

MBU-UVA cooperative program in Engineering (Option B)

Mary Baldwin University students may elect to participate in a dual degree program in engineering offered by the School of Engineering and Applied Science at the University of Virginia. Qualified students attend Mary Baldwin for three years and then, based on their academic performance, are accepted into the University of Virginia for two or more years of study, leading to a Bachelor of Science degree in applied mathematics from Mary Baldwin University and a master's degree in engineering from the University of Virginia. Admission into the graduate program at UVA is based on the admissions criteria at UVA. Interested students should contact Dr. Ong during their first semester at the university *and must sign up and complete the Calculus and Physics sequence during their freshman year.*

Note: Credit that counts toward the master's degree at U. Va. cannot be transferred.

Note: MATH 401 in this applied mathematics program consists of a study of partial differential equations, or a comparable area of mathematics as applied to an engineering problem. The student will present her faculty-approved math 401 project in the spring of her third (last) year at the university. It is recommended that each student in the program complete an internship or a summer course in engineering.

- The requirements are the listed courses below.
- Plus 15 semester hours of coursework transferred from the University of Virginia.

Item #	Title	Credits
MATH 211	INTRO CALC/ANALYTIC GEOMETRY I (Q)	4
MATH 212	INTRO CALC/ANALYTIC GEOMETRY II (Q)	4
MATH 231	DISCRETE MATHEMATICAL STRUCTURES(Q)	3
MATH 233	STATISTICAL METHODS & THEORY I (Q)	3
MATH 250	MATHEMATICS AND PROGRAMMING (Q)	3
MATH 301	MULTIVARIABLE CALCULUS I (Q)	3
MATH 302	MULTIVARIABLE CALCULUS II (Q)	3
MATH 304	NUMERICAL ANALYSIS & COMPUTING (Q)	3
MATH 306	ORDINARY DIFFERENTIAL EQUATIONS (Q)	3
MATH 322	LINEAR ALGEBRA (Q)	3
MATH 401	SENIOR SEMINAR (M)	3
CHEM 121	GENERAL CHEMISTRY I (NQ)	4
CHEM 122	GENERAL CHEMISTRY II (Q)	4
PHYS 201	GENERAL PHYSICS I (NQ)	4
PHYS 202	GENERAL PHYSICS II	4
	MATH 396 or MATH 398	3

Requirements for the Bachelor of Science in Applied Mathematics – Statistics Emphasis (Option C)

The four-year program in Applied Mathematics – Statistics Emphasis (Option C)

Students who are interested in statistical analysis or data analytics should choose this option.

The listed courses below and two electives in Applied Statistics from the following courses: PSYC 250, ECON 301 or a Biostatistics course for a total of 43 s.h. There may be prerequisites for some of these courses. The student's senior project research topic must be in the area of Statistics.

Item #	Title	Credits
MATH 211	INTRO CALC/ANALYTIC GEOMETRY I (Q)	4
MATH 212	INTRO CALC/ANALYTIC GEOMETRY II (Q)	4
MATH 231	DISCRETE MATHEMATICAL STRUCTURES(Q)	3
MATH 233	STATISTICAL METHODS & THEORY I (Q)	3
MATH 234	STATISTICAL METHODS & THEORY II (Q)	3
MATH 301	MULTIVARIABLE CALCULUS I (Q)	3
MATH 302	MULTIVARIABLE CALCULUS II (Q)	3
MATH 322	LINEAR ALGEBRA (Q)	3
MATH 401	SENIOR SEMINAR (M)	3
PHYS 201	GENERAL PHYSICS I (NQ)	4
PHYS 202	GENERAL PHYSICS II	4
	MATH 396 or MATH 398	3