Mathematics

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Mission:

The Norwich University Department of Mathematics seeks to promote interest in mathematics and to serve as a resource for the university community on current advances in mathematical knowledge and application.

The department educates mathematics majors in preparation for civilian or military careers, and for future study in graduate schools.

The department seeks to accomplish this mission through the following activities:

- offering a sequence of courses that introduce undergraduate students in the liberal arts and social sciences to the techniques, methods, and applicability of mathematics;
- offering a basic calculus sequence to provide computer science, mathematics, science, and engineering students with the tools of mathematical analysis;
- offering introductory calculus and quantitative analysis courses to support major programs in architecture, accounting and business administration;
- integrating the use of technology in mathematics education as a tool for solving applied problems;
- offering advanced courses in mathematical theory and application leading to a major in mathematics for a Bachelor of Science degree in mathematics;
- offering a minor in mathematics that complements the major programs of study that a student may select;
- engaging students in experiential education opportunities including undergraduate research, independent study and pre-professional activities;
- offering colloquia and seminars to promote dialogue between members of the department and others of the university community;
- offering math education coursework to support students seeking secondary education licensure;
- offering financial mathematics coursework to support students seeking employment in actuarial science.

Goals:

- Prepare mathematics majors for graduate work in mathematics or careers in computer science, engineering, industry, business, actuary science, or teaching;
- Support the curricula in all disciplines;
- Supply the students with the mathematics courses necessary to qualify for teacher licensure.

Outcomes:

- Graduates will have the ability to formulate problems in the application of mathematics to various disciplines, and analyze, solve, and model solutions to these problems.
- Graduates will have a good understanding and broad knowledge of mathematics including single and multivariable calculus, linear and abstract algebra. Students will demonstrate competency in theoretical, applied, routine, and non-routine problems.
- Graduates will be prepared for successful employment in a profession employing mathematics or a profession of their choice and be well prepared for graduate or professional school.

Careers for this Major:

- Mathematician
- Statistician
- Actuary
- Data Scientist
- University Professor
- Finance
- Government

Math Major

B.S. in Mathematics - Curriculum Map 2019-2020 Catalog

Print as PDF Curriculum Map (http://catalog.norwich.edu/residentialprogramscatalog/collegeofscienceandmathematics/mathematics/Math.pdf)

Course	Cr.	Comp.	Course	Cr.	Comp.
FRESHMAN					
Fall			**Spring**		
General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4		EN 102 Composition and Literature II	3	
EN 101 Composition and Literature I	3		MA 122 Calculus II (General Education Math) c1	4	
MA 121 Calculus I (General Education Math) c1	4		MA 241 Mathematical Computation and Modeling	3	
General Education Social Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal5text)	3		General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4	
Fall Semester Total Cr.:	14		Spring Semester Total Cr.:	14	
SOPHOMORE					
Fall			**Spring**		
EN 201 World Literature I (General Education Literature)	3		EN 202 World Literature II	3	

Course	Cr.	Comp.	Course	Cr.	Comp.
MA 223 Calculus III [c1]	4		MA 224 Differential Equations [c1]	4	
MA 306 Discrete Mathematics [c2]	3		MA 310 Linear Algebra [c2]	3	
PS 211 University Physics I	4		PS 212 University Physics II	4	
Free Elective	3		General Education Arts & Humanities/ History (http://catalog.norwich.edu/ archives/2019-20/residentialprogramscatalog/ generaleducationgoals/ #goal3humanexpressioninliteraturehistoryartshumanitiestext)	3	
Fall Semester Total Cr.:	17		Spring Semester Total Cr.:	17	
JUNIOR					
Fall			**Spring**		
General Education Arts & Humanities/ History (http://catalog.norwich.edu/ archives/2019-20/residentialprogramscatalog/ generaleducationgoals/ #goal3humanexpressioninliteraturehistoryartshumanitiestext)	3		MA Elective (300-400 level) [c2]	3	
General Education Leadership (http:// catalog.norwich.edu/archives/2019-20/ residentialprogramscatalog/ generaleducationgoals/#goal8leadershiptext)	1-3		MA Elective (300-400 level) [c2]	3	
MA 250 Communication in Mathematics	1		MA 304 Advanced Calculus II [2] or 312 Statistical Methodology II	3	
MA 303 Advanced Calculus I [1, c2]	3		PH 303 Survey of Ethics (General Education Ethics) or 350 Medical Ethics	3	
MA 311 Statistical Methodology [c2]	3		Free Elective [sa]	3	
Free Elective [sa]	3				
Free Elective [sa]	3				
Fall Semester Total Cr.:	17-19		Spring Semester Total Cr.:	15	
SENIOR					
Fall			**Spring**		
MA 309 Algebraic Structures [1, c2] or 303 Advanced Calculus I	3		MA Elective (300-400 level) [c2]	3	
MA 411 Senior Seminars (General Education Capstone) [c2]	3		MA Elective (300-400 level) [c2]	3	
Free Elective [sa]	3		Free Elective [sa]	3	
Free Elective [sa]	3		Free Elective [sa]	3	
Free Elective [sa]	3		Free Elective [sa]	3	
Fall Semester Total Cr.:	15		Spring Semester Total Cr.:	15	
TOTAL CREDITS FOR THIS MAJOR: 124-126					

[1] MA 303 and MA 309 alternate as fall semester courses; both courses are required. For years these courses are offered, see Course Descriptions.

[2] MA 304 and MA 312 alternate as spring semester courses; one of the two courses is required.

[c1] Grade of C or higher required in 3 of the 4 courses.

[c2] Grade of C or higher in at least 6 Math courses at the 300/400 level (other than MA 360)

[SA] 15 credits of Free Electives may be taken during a Study Abroad semester.

Math Major-Actuarial Science Conc.

B.S. in Mathematics-Actuarial Science Concentration - Curriculum Map 2019-2020 Catalog

Print as PDF Curriculum Map (http:// catalog.norwich.edu/residentialprogramscatalog/ collegeofscienceandmathematics/mathematics/ Math_ACC.pdf)

Course	Cr.	Comp.	Course	Cr.	Comp.
FRESHMAN					
Fall			**Spring**		
EN 101 Composition and Literature I	3		EN 102 Composition and Literature II	3	

General Education History (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal3humanexpressioninliteraturehistoryartshu	3		General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4	
General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4		MA 122 Calculus II (General Education Math) [c1]	4	
MA 121 Calculus I (General Education Math) [c1]	4		MA 241 Mathematical Computation and Modeling	3	
Fall Semester Total Cr.:	14		Spring Semester Total Cr.:	14	
SOPHOMORE					
Fall			**Spring**		
EC 201 Principles of Economics (Macro) (General Education Social Science) [b,c]	3		EC 202 Principles of Economics (Micro) [b,c]	3	
EN 201 World Literature I (General Education Literature)	3		EN 202 World Literature II	3	
MA 223 Calculus III [c1]	4		MA 224 Differential Equations [c1,]	4	
MA 306 Discrete Mathematics [c2]	3		MA 310 Linear Algebra [c2]	3	
PS 211 University Physics I	4		PS 212 University Physics II	4	
Fall Semester Total Cr.:	17		Spring Semester Total Cr.:	17	
JUNIOR					
Fall			**Spring**		
General Education Arts & Humanities (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal3humanexpressioninliteraturehistoryartshumanitiestext)	3		MA Elective (300-400 level)	3	
General Education Leadership (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal8leadershiptext)	1-3		MA 312 Statistical Methodology II [b,c]	3	
MA Elective	3		MA 419 Internship in Mathematics (or any MA course) [3]	3	
MA 250 Communication in Mathematics	1		PH 303 Survey of Ethics (General Education Ethics) or 350 Medical Ethics	3	
MA 303 Advanced Calculus I [2, c2] or 309 Algebraic Structures	3		Free Elective	3	
MA 311 Statistical Methodology [b,c, c2]	3				
Free Elective	3				
Fall Semester Total Cr.:	17-19		Spring Semester Total Cr.:	15	
SENIOR					
Fall			**Spring**		
MA 309 Algebraic Structures [2, c2] or 303 Advanced Calculus I	3		MA 321 Financial Mathematics (or any MA course) [c]	3	
MA 411 Senior Seminars (General Education Capstone) [3, c2]	3		MA Elective (300-400 level)	3	
Free Elective	3		Free Elective	3	
Free Elective	3		Free Elective	3	
Free Elective	3		Free Elective	3	
Fall Semester Total Cr.:	15		Spring Semester Total Cr.:	15	
TOTAL CREDITS FOR THIS MAJOR: 124-126					

[2] MA 303 and MA 309 alternate as fall semester courses; both courses are required. For years these courses are offered, see Course Descriptions.

[3] Students must take either MA 419 or MA 411 with an approved project on an actuarial science topic.

b   Grade of B- or higher to meet the Society of Actuaries Validation by Educational Experience requirement.
c   Grade of C or higher required.
c1   Grade of C or higher required in 3 of the 4 courses.
c2   Grade of C or higher in at least 6 Math courses at the 300/400 level (other than MA 360)

Math Major-Education Conc.

B.S. in Mathematics-Education Concentration - Curriculum Map 2019-2020 Catalog

Print as PDF Curriculum Map (http://catalog.norwich.edu/residentialprogramscatalog/collegeofscienceandmathematics/mathematics/Math_ED.pdf)

It is recommended that students completing this concentration also major in Secondary Teacher Licensure.

Course	Cr.	Comp.	Course	Cr.	Comp.
FRESHMAN					
Fall			**Spring**		
ED 104 Foundations of Education	3		EN 102 Composition and Literature II	3	
EN 101 Composition and Literature I	3		General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4	
General Education Lab Science (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal4naturalsciencestext)	4		MA 122 Calculus II (General Education Math) c1	4	
MA 121 Calculus I (General Education Math) c1	4		MA 241 Mathematical Computation and Modeling	3	
PY 211 Introduction to Psychology	3		PY 220 Developmental Psychology	3	
Fall Semester Total Cr.:	17		Spring Semester Total Cr.:	17	
SOPHOMORE					
Fall			**Spring**		
ED 234 Learning and Teaching Strategies	4		ED 315 Special Needs Child	3	
EN 201 World Literature I (General Education Literature)	3		EN 202 World Literature II	3	
MA 223 Calculus III c2	4		MA 224 Differential Equations c1	4	
MA 306 Discrete Mathematics c2	3		MA 310 Linear Algebra c2	3	
PS 211 University Physics I	4		PS 212 University Physics II	4	
Fall Semester Total Cr.:	18		Spring Semester Total Cr.:	17	
JUNIOR					
Fall			**Spring**		
General Education Arts & Humanities/History (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal3humanexpressioninliteraturehistoryartshumanitiestext)	3		ED 363 Reading and Writing in the Content Area	4	
MA 250 Communication in Mathematics	1		General Education History/Arts & Humanities (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals/#goal3humanexpressioninliteraturehistoryartsh	3	
MA 303 Advanced Calculus I [2, c2] or 309 Algebraic Structures	3		Mathematics Elective	3	
MA 311 Statistical Methodology c2	3		MA 304 Advanced Calculus II [3] or 312 Statistical Methodology II	3	
Mathematics Elective	3		PY 352 Learning and Memory	4	
PY 324 Adolescent Psychology	3		SO 214 Racial and Cultural Minorities	3	
MA 361 Teaching Mathematics at the Secondary Level (OR Mathematics Elective)	3				
Fall Semester Total Cr.:	19		Spring Semester Total Cr.:	20	

SENIOR				
Fall		**Spring**		
ED 368 Curriculum & Methods in Secondary Subjects	4	ED 425 Student Teaching	12	
General Education Ethics (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals)	3			
General Education Leadership (http://catalog.norwich.edu/archives/2019-20/residentialprogramscatalog/generaleducationgoals)	1-3			
MA 309 Algebraic Structures [2, c2] or 303 Advanced Calculus I	3			
MA 411 Senior Seminars (General Education Capstone) [c2]	3			
MA 361 Teaching Mathematics at the Secondary Level (OR Mathematics Elective)	3			
Fall Semester Total Cr.:	17-19	Spring Semester Total Cr.:	12	
TOTAL CREDITS FOR THIS MAJOR: 137-139				

[2]   MA 303 and MA 309 alternate as fall semester courses; both courses are required. For years these courses are offered, see Course Descriptions.

[3]   MA 304 and MA 312 alternate as spring semester courses; one of the two courses is required.

[c1]   Grade of C or higher required in 3 of the 4 courses.

[c2]   Grade of C or higher in at least 6 Math courses at the 300/400 level (other than MA 360).

Minor

Mathematics Minor Curriculum Map 2019-2020 Catalog

Students self-design this minor so the classes chosen blend with their major, with the advice of the Math Department.

All courses require a grade of C or higher.

Math Elective (higher than MA 121)	3
Math Elective (higher than MA 121)	3
Math Elective (higher than MA 121)	3
Math Elective (300-400 level)	3
Math Elective (300-400 level)	3
Math Elective (300-400 level)	3
Total Cr.	18