

Mathematics Education (BS): Mathematics Specialization

The Mathematics Education: Mathematics Specialization (BS) degree is one of four undergraduate degree options in the Mathematics Education program in the Department of STEM Education.

This degree program prepares teacher-leaders to have a deep understanding of the mathematics they will teach and knowledge about different pedagogical strategies they can apply in the classroom. Students take five courses focused on mathematics education, beginning in their sophomore year and choose from a range of mathematics electives. Our professional courses in the junior and senior year offer relevant pedagogical experiences, emphasize teaching mathematics with technology, and provide rich field experiences in math classrooms. Graduates are recommended for an initial North Carolina teaching license in mathematics grades 9-12. They will be able to seek employment opportunities in education and make a positive difference in their communities.

Students in this program also have the opportunity to participate in:

- Undergraduate research
- Kappa student chapter of the NC Council of Teachers of Mathematics, and other high impact experiences such as Passport to Success, SAY Village, and study abroad
- Tutoring in local schools

For more information about this program, visit our website (<https://ced.ncsu.edu/programs/mathematics-education-middle-school-or-secondary-bachelor/>).

Program Coordinator

Dr. Cyndi Edgington

502J Poe Hall

919.515.1754

cpedging@ncsu.edu

Plan Requirements

Code	Title	Hours	Counts towards
Orientation Course			
ED 100	Intro to Education ¹	2	
Computer Science			
E 115	Introduction to Computing Environments	1	
or COS 100	Science of Change		
Introductory Programming (Choose one): ¹		3	
CSC 112	Introduction to Computing-FORTRAN		

CSC 116	Introduction to Computing - Java	
MA 116	Introduction to Scientific Programming (Math)	
Communication		
COM 112	Interpersonal Communication	3
Mathematical Sciences⁴		
MA 141	Calculus I ¹	4
MA 241	Calculus II ¹	4
MA 242	Calculus III ¹	4
MA 225	Foundations of Advanced Mathematics ¹	3
MA 351	Introduction to Discrete Mathematical Models ¹	3
or MA 341	Applied Differential Equations I	
MA 403	Introduction to Modern Algebra ¹	3
MA 405	Introduction to Linear Algebra ¹	3
MA 408	Foundations of Euclidean Geometry ¹	3
Math Electives (p. 3)		9
Statistics⁴		
ST 307	Introduction to Statistical Programming-SAS	1
ST 311	Introduction to Statistics	3
ST 312	Introduction to Statistics II	3
Natural Sciences		
Natural Science Lab Course (p. 2) ²		8
GEP Natural Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/) ²		3
Professional Education		
EMS 204	Introduction to Mathematics Education ³	2
ED 204	Introduction to Teaching in Today's Schools ¹	2
EDP 304	Educational Psychology ¹	3
ELP 344	School and Society ¹	3

ECI 305	Equity and Education ¹	3
EMS 480	Teaching Mathematics with Technology ¹	3
ED 311	Classroom Assessment Principles and Practices ¹	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab ¹	1
EMS 472	Teaching Mathematics Topics in Senior High School ¹	3
EMS 470	Methods and Materials for Teaching Mathematics ¹	3
EMS 471	Student Teaching in Mathematics ¹	10
EMS 490	School Mathematics from an Advanced Perspective ¹	3
EMS 495	Senior Seminar in Mathematics and Science Education ¹	2
ECI 416	Teaching Students with Disabilities in Inclusive Classrooms ¹	3
GEP Courses		
ENG 101	Academic Writing and Research ²	4
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		6
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		2
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2

GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (verify requirement)	
World Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/) (verify requirement)	
Total Hours	120

¹ A grade of C or higher is required.
² A grade of C- or higher is required.
³ A grade of B- or higher is required.
⁴ At most one grade below a C is permitted in required and elective math, statistics, and computer science courses

Natural Sciences Lab Course Electives

Code	Title	Hours	Counts towards
Chemistry Sequence			
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4	
CH 201 & CH 202	Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory	4	
Biology Sequence			
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4	
BIO 183	Introductory Biology: Cellular and Molecular Biology	4	
Physics Sequence A			
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory	4	
PY 208 & PY 209	Physics for Engineers and Scientists II and Physics for Engineers and Scientists II Laboratory	4	

Physics Sequence B

PY 201	University Physics I	4
PY 202	University Physics II	4

Physics Sequence C

PY 211	College Physics I	4
PY 212	College Physics II	4

Math Electives

Code	Title	Hours	Counts towards
MA 105	Mathematics of Finance	3	
or MA 114	Introduction to Finite Mathematics with Applications		
MA 325	Introduction to Applied Mathematics	3	
MA 335	Symbolic Logic	3	
MA 341	Applied Differential Equations I	3	
MA 402	Mathematics of Scientific Computing	3	
MA 410	Theory of Numbers	3	
MA 421	Introduction to Probability	3	
MA 425	Mathematical Analysis I	3	
MA 427	Introduction to Numerical Analysis I	3	
MA 430	Mathematical Models in the Physical Sciences	3	
MA 432	Mathematical Models in Life Sciences	3	
MA 437	Applications of Algebra	3	
LOG 435	Advanced Logic & Metamathematics	3	

Semester Sequence

This is a sample.

First Year

Fall Semester	Hours
MA 141	Calculus I ²
Science (p.) ¹	4

ENG 101	Academic Writing and Research	4
E 115	Introduction to Computing Environments or COS 100 or Science of Change	1
ED 100	Intro to Education ³	2
Hours		15

Spring Semester

MA 241	Calculus II ²	4
Science (p.) ¹		4
ST 311	Introduction to Statistics ²	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		15

Second Year

Fall Semester

MA 242	Calculus III ²	4
Intro to Programming (p. 1) ²		3
MA 351	Introduction to Discrete Mathematical Models ²	3
EMS 204	Introduction to Mathematics Education ³	2
ED 204	Introduction to Teaching in Today's Schools ³	2
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2-3
Hours		16

Spring Semester

MA 225	Foundations of Advanced Mathematics ²	3
ST 312	Introduction to Statistics II ²	3
ST 307	Introduction to Statistical Programming-SAS ²	1
ECI 305	Equity and Education ³	3
COM 112	Interpersonal Communication	3
Science (p. 1) ¹		3
Hours		16

Third Year

Fall Semester

MA 405	Introduction to Linear Algebra ²	3
MA 403	Introduction to Modern Algebra ²	3
ELP 344	School and Society ³	3
EDP 304	Educational Psychology ³	3
ED 311	Classroom Assessment Principles and Practices ³	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab ³	1
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		16

Spring Semester

EMS 472	Teaching Mathematics Topics in Senior High School ³	3
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EMS 480	Teaching Mathematics with Technology ³	3
Math Elective (p. 3) ²		6
ECI 416	Teaching Students with Disabilities in Inclusive Classrooms ³	3
Hours		15
Fourth Year		
Fall Semester		
Math Elective (p. 3) ²		3
MA 408	Foundations of Euclidean Geometry ²	3
EMS 490	School Mathematics from an Advanced Perspective ³	3
EMS 470	Methods and Materials for Teaching Mathematics ³	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
Hours		15
Spring Semester		
EMS 471	Student Teaching in Mathematics ³	10
EMS 495	Senior Seminar in Mathematics and Science Education ³	2
Hours		12
Total Hours		120

¹ At most one grade below a C- is permitted in the courses satisfying the science requirement.

² At most one grade below a C is permitted in the mathematics, statistics, and computer science courses.

³ A grade below a B- is not permitted in EMS 204. A grade below a C is not permitted in all other EMS, EDP, ECI, ELP, and ED courses.

Career Opportunities

Career Titles

- Elementary School Teacher
- High School Teacher
- Math Professor
- Middle School Teacher

Learn More About Careers

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation.

Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required)

This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

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National Council of Teachers of Mathematics (<https://www.nctm.org/About/>)

North Carolina Association of Educators (<https://www.ncae.org/>)

American Mathematical Society (<https://www.ams.org/home/page/>)

Society for Industrial and Applied Mathematics (<https://www.siam.org/>)