Mathematics Education (BS) and Statistics (BS) (Double Major)

The double degree in Mathematics Education (BS) and Statistics (BS) is one of two double 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 and statistics 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. 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.

In addition, students earn a degree in Statistics. Upper level statistics electives help prepare students for a variety of statistics-related fields in addition to teaching at the secondary level and graduate study in statistics or related fields.

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
Email: cpedging@ncsu.edu
502J Poe Hall
919-515-1754

Plan Requirements

Mathematics Education (BS) and Statistics (BS) (Dual Degree): 129 Total Units

Code	Title	Hours
English and Communication		
ENG 101	Academic Writing and Research [1]	4
COM 112	Interpersonal Communication	3
Natural Sciences		
Natural Sciences I & II (p. 2) [1]		8
Natural Science Elective [1]		3

To satisfy the science requirement, a sequence of two lab-based courses (BIO 181 and BIO 183, or CH 101/CH 102 and CH 201/CH 202, or PY 205 and PY 208, or PY 201 and PY 202, or PY 211 and PY 212) must be taken. The third science may be selected from the GEP list of approved science courses.

Mathematical Sciences		
MA 141	Calculus I [2]	4
MA 241	Calculus II [2]	4
MA 242	Calculus III [2]	4
MA 225	Foundations of Advanced Mathematics [2]	3
MA 405	Introduction to Linear Algebra [2]	3
MA 403	Introduction to Modern Algebra [2]	3
MA 408	Foundations of Euclidean Geometry [2]	3
Statistics Courses		
ST 311	Introduction to Statistics [2]	3
ST 312	Introduction to Statistics II [2]	3
ST 307	Introduction to Statistical Programming- SAS [2]	1
ST 308	Introduction to Statistical Programming - R [2]	1
ST 421	Introduction to Mathematical Statistics I [2]	3
ST 422	Introduction to Mathematical Statistics II [2]	3
ST 430	Introduction to Regression Analysis [2]	3
ST 431	Introduction to Experimental Design [2]	3
ST 432	Introduction to Survey Sampling [2]	3
ST 445	Introduction to Statistical Computing and Data Management [2]	3
Advanced Statistics Elective (p. 2) [2]		3
Professional Education		
ED 100	Intro to Education [2]	2
EDP 304	Educational Psychology [2]	3
ELP 344	School and Society [2]	3
ECI 416	Teaching Exceptional Students in the Mainstreamed Classroom [2]	3
EMS 204	Introduction to Mathematics Education [3]	2
ED 204	Introduction to Teaching in Today's Schools [2]	2
ED 311	Classroom Assessment Principles and Practices [2]	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab [2]	1
EMS 480	Teaching Mathematics with Technology [2]	3
EMS 470	Methods and Materials for Teaching Mathematics [2]	3
EMS 471	Student Teaching in Mathematics [2]	10
EMS 472	Teaching Mathematics Topics in Senior High School [2]	3
EMS 490	School Mathematics from an Advanced Perspective [2]	3
EMS 495	Senior Seminar in Mathematics and Science Education [2]	2
GEP Courses		
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 Additional Breadth (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/) (Humanities/Social Sciences/Visual and Performing Arts)	3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	5
GEP U.S. Diversity (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-us-diversity/) (verify requirement)	
GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (verify requirement)	
Foreign Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/foreign-language-proficiency/) (verify requirement)	
Total Hours	129

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.

Natural Sciences I & II

Code	Title	Hours
Chemistry Sequence		
CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
CH 201	Chemistry - A Quantitative Science	3
CH 202	Quantitative Chemistry Laboratory	1
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	Physics for Engineers and Scientists I	3
PY 208	Physics for Engineers and Scientists II	3
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

Advanced Statistics Elective

Code	Title	Hours
CSC 442	Introduction to Data Science	3
ECG 561	Applied Econometrics I	3
EMS 519	Teaching and Learning of Statistical Thinking	3
GPH 404	Epidemiology and Statistics in Global Public Health	3
MA 412	Long-Term Actuarial Models	3
MA 413	Short-Term Actuarial Models	3
MA 546	Probability and Stochastic Processes I	3
ST 401	Experiences in Data Analysis	4
ST 404	Epidemiology and Statistics in Global Public Health	3
ST 405	Applied Nonparametric Statistics	3
ST 412	Long-Term Actuarial Models	3
ST 413	Short-Term Actuarial Models	3
ST 433	Applied Spatial Statistics	3
ST 434	Applied Time Series	3
ST 435	Statistical Methods for Quality and Productivity Improvement	3
ST 437	Applied Multivariate and Longitudinal Data Analysis	3
ST 440	Applied Bayesian Analysis	3
ST 442	Introduction to Data Science	3
ST 491	Statistics in Practice	3
ST 495	Special Topics in Statistics	1-6
ST 501	Fundamentals of Statistical Inference I	3
ST 502	Fundamentals of Statistical Inference II	3
ST 503	Fundamentals of Linear Models and Regression	3
ST 505	Applied Nonparametric Statistics	3
ST 506	Sampling Animal Populations	3
ST 507	Statistics For the Behavioral Sciences I	3
ST 508	Statistics For the Behavioral Sciences II	3
ST 511	Statistical Methods For Researchers I	3
ST 512	Statistical Methods For Researchers II	3
ST 513	Statistics for Management I	3
ST 514	Statistics For Management and Social Sciences II	3
ST 515	Experimental Statistics for Engineers I	3
ST 516	Experimental Statistics For Engineers II	3
ST 517	Applied Statistical Methods I	3
ST 519	Teaching and Learning of Statistical Thinking	3
ST 520	Statistical Principles of Clinical Trials	3
ST 524	Statistics In Plant Science	3
ST 533	Applied Spatial Statistics	3
ST 534	Applied Time Series	3
ST 535	Statistical Methods for Quality and Productivity Improvement	3
ST 537	Applied Multivariate and Longitudinal Data Analysis	3
ST 540	Applied Bayesian Analysis	3
ST 544	Applied Categorical Data Analysis	3
ST 546	Probability and Stochastic Processes I	3
ST 555	Statistical Programming I	3
ST 556	Statistical Programming II	3
ST 557	Using Technology to Teach Statistics	3
ST 561	Applied Econometrics I	3
ST 562	Data Mining with SAS Enterprise Miner	3
ST 590	Special Topics	1-6

Semester Sequence

This is a sample.

Course	Title	Hours
First Year		
Fall Semester		
MA 141	Calculus I [1]	4

ST 311	Introduction to Statistics [1]	3
ENG 101	Academic Writing and Research	4
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
ED 100	Intro to Education	2
	Hours	14
Spring Semester		
MA 241	Calculus II [1]	4
Science		4
COM 112	Interpersonal Communication	3
ST 312	Introduction to Statistics II [1]	3
ST 307	Introduction to Statistical Programming-SAS [1]	1
	Hours	15
Second Year		
Fall Semester		
MA 242	Calculus III [1]	4
MA 225	Foundations of Advanced Mathematics [1]	3
EMS 204	Introduction to Mathematics Education	2
ED 204	Introduction to Teaching in Today's Schools	2
ST 308	Introduction to Statistical Programming - R [1]	1
Science		4
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	17
Spring Semester		
ST 445	Introduction to Statistical Computing and Data Management [1]	3
MA 405	Introduction to Linear Algebra [1]	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
Science		3
	Hours	17
Third Year		
Fall Semester		
ST 421	Introduction to Mathematical Statistics I [2]	3
MA 403	Introduction to Modern Algebra [1]	3
ELP 344	School and Society	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
EDP 304	Educational Psychology	3
ECI 416	Teaching Exceptional Students in the Mainstreamed Classroom	3
	Hours	18
Spring Semester		
ST 422	Introduction to Mathematical Statistics II [2]	3
ST 432	Introduction to Survey Sampling [1]	3
EMS 480	Teaching Mathematics with Technology	3
ED 311	Classroom Assessment Principles and Practices	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab	1
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		3
ST 431	Introduction to Experimental Design [1]	3
	Hours	18
Fourth Year		
Fall Semester		
EMS 472	Teaching Mathematics Topics in Senior High School [3]	3
EMS 490	School Mathematics from an Advanced Perspective	3
EMS 470	Methods and Materials for Teaching Mathematics [3]	3
GEP Additional Breadth (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/) (Humanities/Social Sciences/Visual and Performing Arts)		3
MA 408	Foundations of Euclidean Geometry [1]	3
Advanced Statistics Elective [1,2]		3
	Hours	18
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	129

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 mathematics, statistics, and computer science courses. A C- or better is required in ST 421 Introduction to Mathematical Statistics I.
3. A grade below a B- is not permitted in EMS 204 Introduction to Mathematics Education. A grade below a C is not permitted in all other EMS, EDP, ECI, ELP, and ED courses.