

## **Areas of Concentration for Mathematics and Statistics Majors**

The Bachelor of Science in Mathematics and Statistics is a flexible degree program that can accommodate students with a variety of interests. We present below several model programs of study for students who wish to concentrate in a specific area:

- Mathematics
- Applied Mathematics
- Statistics
- Mathematics Education

### **All Mathematics and Statistics Majors**

All students majoring in Mathematics and Statistics are required to take the following

Introductory courses:

MA 125 Calculus I  
MA 126 Calculus II  
ST 315 Applied Probability and Statistics  
or ST 210 Statistical Reasoning and Applications

Intermediate courses:

MA 227 Multivariable Calculus  
MA 237 Linear Algebra  
MA 238 Differential Equations I  
ST 335 Applied Regression Analysis

Upper division courses: 21 additional hours of 300 level or above courses in mathematics or statistics, including at least three courses chosen from MA 334, MA 335, or 400 level or above courses. Students who wish to concentrate in a specific area should choose these additional courses from one of the programs of study below.

## Mathematics

This program is recommended for students who are planning to do graduate work in mathematics, or who are most interested in mathematical theory.

*Students should take the following core courses:*

MA 320 Foundations of Mathematics (as soon as possible after MA 125)  
 MA 334 Advanced Calculus I  
 MA 335 Advanced Calculus II  
 MA 413 Algebra I

*And three of the following courses:*

MA 311 Introduction to Number Theory  
 MA 316 Linear Algebra II  
 MA 414 Algebra II  
 MA 434 Topology  
 MA 437 Complex Variables  
 MA 490 Special Topics

*Course offerings by semester (subject to change):*

Fall Semester	Spring Semester	Summer Semester
MA 311	MA 316	MA 413
MA 320	MA 437	
MA 334	MA 335	
MA 413	MA 414	
MA 434		

## Applied Mathematics

Students primarily interested in mathematics applications should choose a minor or second major in the field of application that interests them most (usually an area of physical, social, or computer science). They should consult with their advisor about which electives are most important for their intended area of application.

*Students should take the following core courses:*

MA 332 Differential Equations II  
 ST 340 Design and Analysis of Experiments  
 MA 354 Mathematical Modeling  
 MA 436 Numerical Analysis

*And three of the following courses including at least two chosen from MA 334 or the 400 level courses:*

MA 334 Advanced Calculus I \*  
 MA 367 Combinatorial Enumeration  
 MA 437 Complex Variables \*  
 MA 451 Probability  
 MA 458 Operations Research  
 MA 481 Cryptography  
 MA 490 Special Topics

\* Students who are interested in graduate studies in applied mathematics are strongly recommended to take these courses.

*Course offerings by semester (subject to change):*

Fall Semester	Spring Semester	Summer Semester
MA 332	ST 340	
MA 334	MA 367	
MA 354	MA 436	
MA 451	MA 437	
MA 458	MA 481	

## Statistics

This program is recommended for students who are most interested in statistics or are planning to do graduate work in statistics or biostatistics.

*Students should take the following core courses:*

ST 340 Design and Analysis of Experiments  
 ST 470 Theory of Statistics  
 ST 475 Statistical Computing and Graphics  
 ST 480 Statistical Practicum (W - 1 hr.)  
 MA 451 Probability

*And any three of the following courses:*

ST 345 Sampling and Survey Techniques  
 ST 350 Applied Time Series Analysis  
 ST 355 Nonparametric Statistical Methods  
 ST 415 Statistical Quality Control and Reliability  
 ST 425 Applied Linear Models  
 ST 450 Categorical Data Analysis  
 ST 460 Multivariate Statistical Analysis  
 ST 490 Special Topics

Students who are interested in graduate studies in statistics are strongly recommended to take MA 334 and MA 335 (Advanced Calculus I and II).

*Course offerings by semester (subject to change):*

Fall Semester	Spring Semester	Summer Semester
ST 355 (E)	ST 340	ST 345 (E)
ST 415 (O)	ST 350 (E)	ST 450 (O)
MA 451	ST 460 or ST 425 (O)	
	ST 470	
	ST 475	
	ST 480 (1 hr)	

E = to be offered in even numbered years,

O = to be offered in odd numbered years.

## Mathematics Education

The College of Education offers a Secondary Mathematics Education program leading to a Bachelor of Science degree and teaching certification. Students in this program must double major in Education and Mathematics and Statistics. The electives for this program are prescribed by the College of Education.

An alternative route to a career in mathematics education is to complete a bachelor of science in Mathematics and Statistics and then enter the Alternative Master of Education degree program. Students should consult the College of Education for more details.