

# MATHEMATICS, B.S.

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

## Major

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at <https://www.marshall.edu/gened/>.

Code	Title	Credit Hours
<b>Core Curriculum</b>		
<i>Core 1: Critical Thinking</i>		
FYS 100	First Yr Sem Critical Thinking	3
MTH 229	Calculus/Analytic Geom I (CT)	5
	Critical Thinking Course	3
<i>Core 2</i>		
ENG 101	Beginning Composition	3
ENG 201	Advanced Composition	3
CMM 103	Fund Speech-Communication	3
MTH 229	Calculus/Analytic Geom I (CT)	5
	Core II Natural/Physical Science	4
	Core II Humanities	3
	Core II Social Science	3
	Core II Fine Arts	3
<i>Additional University Requirements</i>		
	Writing Intensive	3
	Writing Intensive	3
	Multicultural or International	3
MTH 490	Internship in Mathematics (Capstone)	2
	or MTH 491  Senior Seminar	
<b>College-Specific</b>		
	COS Physical/Natural Science	4
	COS Physical/Natural Science	3
<b>Major-Specific</b>		
MTH 229	Calculus/Analytic Geom I (CT)	5
MTH 230	Calculus/Analytic Geom II	4
CS 110	Computer Science I	3
MTH 231	Calculus/Analytic Geom III	4
MTH 300	Intro to Higher Math	4
MTH 331	Linear Algebra	4
MTH 490	Internship in Mathematics (C)	2
	or MTH 491  Senior Seminar	
<i>MTH Sequence I &amp; II</i>		
	Select two of the following MTH sequences:	12
Advanced Calculus:		
	MTH 427  Advanced Calculus I & MTH 428  and Advanced Calculus II	
Topology:		
	MTH 430  Topology I & MTH 431  and Topology II	

MTH 430  Topology I & MTH 431  and Topology II	
Modern Algebra:	
MTH 450  Modern Algebra I & MTH 452  and Modern Algebra II	
Math Elective or Minor or 2nd Major	3
Math Elective or Minor or 2nd Major	3
Math Elective or 2nd Major	3
Math Elective or 2nd Major	3
<i>Math Electives</i>	
MTH 335  Ordinary Diff Equations	
MTH 360  Intro to Complex Variables	
MTH 361  Vector Calculus	
MTH 405  History of Mathematics	
MTH 411  Mathematical Modeling	
MTH 415  Partial Differential Equations	
MTH 416  Advanced Differential Equation	
MTH 427  Advanced Calculus I	
MTH 428  Advanced Calculus II	
MTH 430  Topology I	
MTH 431  Topology II	
MTH 440  Graph Th and Combinatorics	
MTH 442  Numerical Linear Algebra	
MTH 443  Numerical Analysis	
MTH 448  Modern Geometries	
MTH 449  Projective Geometry	
MTH 450  Modern Algebra I	
MTH 452  Modern Algebra II	
MTH 455  Number Theory	
STA 412  Regression Analysis	
STA 413  Experimental Designs	
STA 420  Nonparametric Statistics	
STA 422  Time Series Forecasting	
STA 425  Sampling Designs & Estimation	
STA 445  Probability & Statistics I	
STA 446  Probability & Statistics II	
STA 464  Statistical Computing	
STA 466  Stochastic Processes	
STA 470  Applied Survival Analysis	
300/400 Elective	3
300/400 Elective	3
Free Elective	3
Free Elective	3
Free Elective	3
Free Elective	3
Free Elective	3
Free Elective	3
Free Elective	2

## Major Information

- Mathematics majors are not required to satisfy the College of Science requirement of a minor in another discipline. However,

Mathematics majors often elect to complete a second (or more) major(s) and/or one (or more) minor(s).


- Math electives may not duplicate those used for the sequence requirements. The number of elective courses required depends on whether a student is pursuing an outside minor or a 2nd major. The following are the three options:

- **No Outside Major or Minor:** A student may graduate with a major in Mathematics, without a second major or a minor, by completing an additional 4 elective mathematics courses from the list of electives. The major requires 50 credit hours.
- **Outside Minors:** A student graduating with a single major in Mathematics, and at least one minor outside the department, must complete at least 2 additional elective mathematics courses. Effectively, the major requires 44 credit hours.
- **Outside Double Majors:** A student graduating with multiple majors, including Mathematics, need not take any additional elective math courses. Effectively, the major requires 38 credit hours. A student pursuing multiple majors, including at least two of the majors in the department, should consult with the undergraduate coordinator or chair of the department for details.
- Since the major is quite flexible, students are expected to consult with the undergraduate coordinator in the department. Before graduation, the undergraduate coordinator must approve the selection of sequences and electives.
- Please check with advisor about course offerings. Not all classes will be offered every semester.
- Forty (40) hours must be earned in courses numbered 300-499.

## Areas of Emphasis




- Mathematical Statistics, Emphasis (<http://catalog.marshall.edu/undergraduate/programs-az/science/mathematics/mathematics-bs/mathematical-statistics-emphasis/>)

 - General Education Course

 - Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.


## Four Year Plan

The Marshall University Department of Mathematics prepare students for careers in the mathematical sciences and related disciplines. Graduates of our mathematics programs have had successful careers in government and industry. Our graduates have also earned advanced degrees in mathematics, statistics, engineering, and economics. Our degree programs may also be used to prepare for secondary mathematics certification and for professions such as law or medicine. The department has a dynamic and engaged faculty who focus both on excellent teaching and on many areas of mathematical research.

Course	Title	Credit Hours
<b>First Year</b>		
<b>First Semester</b>		
FYS 100	First Yr Sem Critical Thinking	3
ENG 101 	Beginning Composition	3
MTH 229  	Calculus/Analytic Geom I (CT)	5
Core II Fine Arts		3




UNI 100	Freshman First Class	1
Credit Hours		15

### Second Semester



MTH 230 	Calculus/Analytic Geom II	4
Core I Critical Thinking		3
CMM 103	Fund Speech-Communication	3
Multicultural or International		3
Core II Social Science		3
Credit Hours		16

### Second Year

#### First Semester


CS 110	Computer Science I	3
MTH 231 	Calculus/Analytic Geom III	4
ENG 201  	Advanced Composition	3
Core II Physical/Natural Science		4
Credit Hours		14

#### Second Semester

MTH 300  	Intro to Higher Math	4
Math Elective or Minor or 2nd Major		3
Core II Humanities		3
COS Physical/Natural Science		3
300/400 Elective		3
Credit Hours		16

### Third Year

#### First Semester

MTH 331 	Linear Algebra	4
MTH Sequence I		3
Math Elective or Minor or 2nd Major		3
Free Elective		3
Free Elective		1
Credit Hours		14

#### Second Semester



MTH Sequence I		3
Writing Intensive		3
Math Elective or 2nd Major		3
Free Elective		3
COS Physical/Natural Science		4
Credit Hours		16

### Fourth Year

#### First Semester

MTH Sequence II		3
Writing Intensive		3
Math Elective or 2nd Major		3
300/400 Elective		3
Free Elective		3
Credit Hours		15

#### Second Semester

MTH 490 	Internship in Mathematics (C) or or Senior Seminar	2
MTH 491 		
MTH Sequence II		3
Free Elective		3

Free Elective	3
Free Elective	3
Credit Hours	14
Total Credit Hours	120