

Department of Mathematics

Bachelor of Science MATHEMATICS MAJOR (Pure Mathematics)

A major in Mathematics with a Pure Mathematics Option may be taken on the Bachelor of Science degree. The Pure Mathematics Option includes courses that emphasize the theoretical foundations of mathematics. It provides students with opportunities to understand and appreciate the basic skills, techniques, and methods of classical and contemporary mathematics; and their relationship to and application in other disciplines. After completing this degree, students will be prepared for graduate study in mathematics as well as a wide range of employment opportunities in business, government, and industry.

Faculty Advisors:

Dr. James Bruening, Dr. Victor Gummersheimer, Dr. Tim Ray, and Dr. Robert Sheets.

Career Opportunities:

Mathematicians often work side by side with non-mathematicians, helping them to formulate and solve mathematical problems. Mathematics is being used today in unprecedented ways: to plan the path of a robot arm, to model oil reservoirs under the surface of the earth, and to make and break security codes.

Job titles held by mathematicians include applied mathematician, computer scientist, operations research analyst, programmer, methods analyst, technical sales representative, cryptographer, cryptanalyst, cartographer, computing analyst, and research scientist.

Employment Outlook:

Mathematicians have the best jobs! Mathematicians have virtually an unlimited number of career opportunities! According to Jobs Related Almanac, a publication of World Almanac Books, careers that require a very strong background in mathematics were listed as the five “best” jobs, namely software engineer, actuary, computer systems analyst, computer programmer, and mathematician.

High School Preparation for Major:

Prospective mathematics majors should take all the mathematics in high school that they can take.

This means a minimum of two years of algebra, a year of geometry, and a year of pre-calculus mathematics. The prospective major should be ready to take at least the first course in analytic geometry and calculus upon enrollment. Higher placement is possible for more extensive backgrounds, and credit may be received through the Advanced Placement program or the Dual Credit program.

DEPARTMENT OF MATHEMATICS
SOUTHEAST MISSOURI STATE UNIVERSITY

REQUIREMENTS FOR A

MATHEMATICS MAJOR (Pure Mathematics Option)

BACHELOR OF SCIENCE

	Prereq.	Hours
University Studies¹ (includes EN100)		48
Mathematics Major		43
<u>Required courses</u>		31
MA138 Discrete Mathematics I	MA134	3
MA140 Analytic Geometry and Calculus I	MA133 MA134	5
MA145 Analytic Geometry and Calculus II	MA140	4
MA240 Analytic Geometry and Calculus III	MA145	3
MA250 Foundations of Mathematics	MA140	3
MA345 Linear Algebra	MA140	3
MA445 Modern Algebra	MA250	3
MA448 Mathematics Seminar	MA240	1
MA523 Probability & Statistics I	MA240	3
MA546 Advanced Calculus I	MA240 MA250	3
<u>Advanced Component</u>		12
Select any mathematics courses numbered above MA250, with one being from the following list.		
MA524 Probability and Statistics II	MA523	3
MA540 Projective Geometry	MA340	3
MA544 Numerical Analysis	MA240 MA334	3
MA545 Linear Algebra and Matrices	MA445	3
MA547 Advanced Calculus II	MA546	3
MA550 Differential Equations II	MA350	3
WP 003 75 Hour Writing Test		0
Electives²		29
Minimum degree requirement		120

¹ MA140 Will satisfy the Logical Systems Requirement in University Studies.

² No minor is required.

Major: **Mathematics**
(**Pure Mathematics Option**)

Degree: **Bachelor of Science**

<u>First Semester</u>			<u>Hrs.</u>	<u>Second Semester</u>			<u>Hrs.</u>
UI100	First Year Seminar		3	EN140	Rhet.& Crit. Think.		3
EN100	English Comp. I		3		University Studies		3
	University Studies		3		University Studies		3
MA140	Anal. Geom. & Calc.I		5		University Studies		3
				MA145	Anal.Geom.& Calc.II		4
				WP002	Writing Skills Test		
			<u>14</u>				<u>16</u>
 <u>Third Semester</u>			 <u>Hrs.</u>	 <u>Fourth Semester</u>			 <u>Hrs.</u>
MA240	Anal. Geom. & Calc. III		3	MA250	Foundations Math.		3
MA138	Discrete Math. I		3	MA345	Linear Algebra		3
	University Studies		3		University Studies		3
	University Studies		3		University Studies		3
	University Studies		3		Elective		3
	University Studies		3				
			<u>18</u>				<u>15</u>
 <u>Fifth Semester</u>			 <u>Hrs.</u>	 <u>Sixth Semester</u>			 <u>Hrs.</u>
MA523	Prob. & Stat. I		3	MA445	Modern Algebra		3
MA546	Advanced Calculus I		3	MAxxx	Mathematics ¹		3
UI3xx	University Studies		3	UI3xx	University Studies		3
	Elective		3		Elective		3
	Elective		3		Elective		3
			<u>15</u>	WP003	75 Hour Writing Test		
							<u>15</u>
 <u>Seventh Semester</u>			 <u>Hrs.</u>	 <u>Eighth Semester</u>			 <u>Hrs.</u>
MAxxx	Mathematics ¹		3	MAxxx	Mathematics ¹		3
MAxxx	Mathematics ¹		3	MA448	Mathematics Seminar		1
UI4xx	University Studies		3		Elective		3
	Elective		3		Elective		2
	Elective		3		Elective		3
			<u>15</u>				<u>12</u>

¹ Unspecified mathematics courses must be numbered above MA250, and must include one of the following courses: MA524, MA540, MA544, MA545, MA547, MA550.