MATHEMATICS, B.S.

Objectives

This degree program is designed for students who want a broad foundation in mathematics. By choosing appropriate mathematics electives in consultation with their faculty advisor, the student can emphasize in pure mathematics, applied and computational mathematics, or a combination of both. The degree can be tailored to meet the needs of students who expect to pursue a graduate degree in pure mathematics, expect to pursue a graduate degree in applied mathematics, or intend to work in a mathematics-related field in industry.

Learning Outcomes

- 1. Content Proficiency. In each of the following subject areas of mathematics:
 - a. calculus and analysis,
 - b. abstract and linear algebra,
 - c. probability,
 - d. numerical methods and scientific computation; Students will be able to:
 - i. State and use basic definitions and theorems.
 - Solve problems using a variety of techniques including: methods of proof, geometric reasoning, algebraic thinking, algorithmic techniques, and the application of computer software and programming.
 - iii. Explain the central concepts of the subject.
- Communication. Students will be able to communicate mathematics both orally and in writing. They will do so according to accepted standards in mathematics.
- Tools. Students will employ a variety of tools such as the library, Internet, computers, and calculators to solve problems and do undergraduate research.
- 4. Independent Learners. Students will be able to independently investigate a mathematical topic.
- 5. Career and Professional Preparation. LMU mathematics graduates will be prepared to engage in mathematics-related professions or in a graduate school academic environment. This preparation will include significant pre-professional experiences.

General Major Requirements

Students must complete the corresponding Bachelor of Arts or Bachelor of Science University Core requirements as defined by the Frank R. Seaver College of Science and Engineering; students will choose the proper sequence of University Core courses in consultation with their advisor.

Mathematics majors and minors are not permitted to enroll in a mathematics course without a minimum grade of C (2.0) in that course's prerequisite. A minimum grade of C (2.0) is required in each course in the lower division major requirements. A minimum cumulative grade point average of C (2.0) is required in the upper division major requirements for graduation.

Code	Title	Semester Hours			
Lower Division Requirements					
MATH 131	Calculus I	4			

MATH 181Introduction to ProgrammingMATH 181Introduction to ProgrammingMATH 190Workshop in Mathematics IMATH 234Calculus IIIMATH 246Differential Equations and Linear AlgebraMATH 249Introduction to Methods of ProofMATH 251Applied Linear AlgebraMATH 290Workshop in Mathematics IISelect two of the following:6-6BIOL 101General Biology IBIOL 102General Biology IBIOL 102General Chemistry ICHEM 110General Chemistry IICHEM 112General Chemistry for EngineersCMSI 1010Computer Programming and LaboratoryCMSI 2120Data Structures and ApplicationsPHYS 2100Introduction to MechanicsPHYS 1100Introduction to Electricity and MagnetismSubtotal35-33Upper Division Requirements4MATH 323Real Analysis IMATH 324Applied Numerical MethodsMATH 325Applied Numerical MethodsMATH 390Workshop in Mathematics IIIMATH 492Workshop in Mathematics IVMATH 433Abstract Algebra IMATH 423Real Analysis IMATH 424Advanced Linear AlgebraMATH 425Advanced Numerical MethodsMATH 446Advanced Topics in ProbabilityMATH 446Advanced Numerical MethodsMATH 446Advanced Numerical MethodsMATH 446Advanced Numerical MethodsMATH 446Mathematical ModelingSelect twe	Total Semester H	ours	69-71
MATH 181Introduction to Programming2MATH 190Workshop in Mathematics I2MATH 234Calculus III4MATH 246Differential Equations and Linear Algebra4MATH 247Introduction to Methods of Proof4MATH 249Introduction to Methods of Proof4MATH 251Applied Linear Algebra6MATH 290Workshop in Mathematics II5Select two of the following:6BIOL 101General Biology I6BIOL 102General Biology II6CHEM 110General Chemistry I6CHEM 112General Chemistry II6CHEM 114General Chemistry II7CHEM 113General Chemistry II7CMSI 2120Data Structures and Applications7PHYS 2100Introduction to Electricity and Magnetism7Subtotal35-337MATH 323Real Analysis I7MATH 333Abstract Algebra I7MATH 390Workshop in Mathematics III7MATH 492Workshop in Mathematics III7MATH 493 <th>Subtotal</th> <th></th> <th>34</th>	Subtotal		34
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MATH 181Introduction to Programming2MATH 190Workshop in Mathematics I2	MATH 246	Differential Equations and Linear Algebra	
MATH 181 Introduction to Programming 2	MATH 234	Calculus III	
	MATH 190	Workshop in Mathematics I	
MATH 132 Calculus II	MATH 181	Introduction to Programming	2
	MATH 132	Calculus II	Z

Bachelor of Science in Mathematics Curriculum

(124-126 S.H.)

Course	Title	Semester Hours
First Year		
Fall		
MATH 131	Calculus I	4
MATH 190	Workshop in Mathematics I	2
FFYS 1000	First Year Seminar	4
ORNT 1000	First Year Forum	0
Select one of the following:		3-4
Science Requirement		

University Core

	Minimum Semester Hours	115-131
	Semester Hours	16-17
Upper Division Elective		3-4
University Core		4
MATH 492	Workshop in Mathematics IV	1
MATH 3xx or 4xx Mathem		4
MATH 3xx or 4xx Mathem		4
Spring		
	Semester Hours	14-16
Upper Division Elective		3-4
University Core		3-4
MATH 3xx or 4xx Mathem	natics Elective	4
MATH 4xx Mathematics E	Elective ¹	4
Fall		
Senior Year		13-17
opper Division Lieutive	Semester Hours	15-17
Upper Division Elective		3-4
University Core		3-4
MATH 390	Workshop in Mathematics III	4
MATH 382	Applied Numerical Methods	4
MATH 333	Abstract Algebra I	4
Spring	Semester Hours	15-16
opper Division Elective	Semester Hours	
University Core Upper Division Elective		3-4
	rissasiity and mathematical statistics	4
MATH 323 MATH 361	Probability and Mathematical Statistics	4
нан МАТН 323	Real Analysis I	4
Junior Year Fall		
	Semester Hours	15-17
University Core		3-4
University Core		3-4
MATH 290	Workshop in Mathematics II	1
MATH 251	Applied Linear Algebra	4
MATH 234	Calculus III	4
Spring		
	Semester Hours	15-16
University Core		3-4
University Core		4
MATH 249	Introduction to Methods of Proof	4
MATH 246	Differential Equations and Linear Algebra	4
Fall		
Sophomore Year	Semester Hours	12-18
University Core		
Science Requirement		
Select one or both of the	following:	3-8
RHET 1000	Rhetorical Arts	3-4
MATH 181	Introduction to Programming	2
MATH 132	Calculus II	4
Spring		
	Semester Hours	13-14

¹

One upper division course is required from MATH 423 Real Analysis II, MATH 433 Abstract Algebra II, MATH 450 Advanced Linear Algebra, MATH 460 Advanced Topics in Probability, MATH 472 Topology, MATH 482 Advanced Numerical Methods, or MATH 496 Mathematical Modeling.