MATHEMATICS (BS)

Students earning a B.S. in Mathematics will acquire foundational knowledge in the field, as well as competency in the critical thinking, technological, and communication skills necessary for its application. The prevalent use of increasingly complex mathematical models in every STEM field (and beyond), has made facility with the language and techniques of mathematics a highly desirable skill. Graduating students are prepared for industry jobs in finance, tech, risk analysis, climate science, criminal justice, and the like, as well as teaching careers in secondary school or junior college. Typical destinations for students wishing to pursue graduate studies are biology, chemistry, computer science, economics, engineering, finance, law, medicine, and of course, mathematics.

Related Programs

Major

- Mathematics - Education Track (BS) (https://catalog.luc.edu/undergraduate/arts-sciences/mathematics-statistics/mathematics-education-track-bs/)

Minor

- Mathematics Minor (https://catalog.luc.edu/undergraduate/arts-sciences/mathematics-statistics/mathematics-minor/)

Combined

- Mathematics (BS/MS) (https://catalog.luc.edu/undergraduate/accelerated-bachelors-masters-program/mathematics-bs-ms/)

Curriculum

AP Credit Policies (https://catalog.luc.edu/undergraduate/arts-sciences/mathematics-statistics/#policiestext)

Code	Title	Hours
Required Courses		
Foundational Requirements		
MATH 161	Calculus I	4
MATH 162	Calculus II	4
MATH 201	Introduction to Discrete Mathematics & Number Theory	3
MATH 212	Linear Algebra	3
MATH 215	Object-Oriented Programming with Mathematics	3
or COMP 170	Introduction to Object-Oriented Programming	
MATH 263	Multivariable Calculus	4
MATH 264	Ordinary Differential Equations	3
STAT 203	Introduction to Probability & Statistics	3
or MATH 304 / STAT 304	Introduction to Probability	
One year of Modern Algebra:		
MATH 313	Abstract Algebra	3
MATH 314	Advanced Topics Abstract Algebra	3
or MATH 315	Advanced Topics in Linear Algebra	
One year of Analysis:		
MATH 351	Introduction to Real Analysis I	3
MATH 352	Introduction to Real Analysis II	3
or MATH 353	Introduction to Complex Analysis	
Two 3-credit upper division (300-level) electives in mathematics.		6
Science Requirements		
Select two of the following:		6
ANTH 101	Human Origins	
ANTH 103	Biological Background Human Social Behavior	
BIOL 101	General Biology I	
BIOL 102	General Biology II	
CHEM 101	General Chemistry A Lecture/Discussion	
CHEM 102	General Chemistry B Lecture/Discussion	
CHEM 160	Chemical Structure and Properties	
CHEM 180	Chemical Reactivity I	
ENVS 101	The Scientific Basis of Environmental Issues	
ENVS 218	Biodiversity & Biogeography	
ENVS 224	Climate & Climate Change	
PHYS 121	College Physics I with Calculus Lecture/Discussion	
PHYS 122	College Physics II with Calculus Lecture/Discussion	
Total Hours		**51**

Note: This degree has waivers for both Quantitative and Scientific core.

Suggested Sequence of Courses

Note: This is only one possibility. Among other things, depending on initial math placement, which can range from MATH 100 to MATH 263, the schedule will look very different. Especially for students starting at MATH 161 or above, there is a lot of space to pursue a minor or even a second major.

Course	Title	Hours
Year 1		
Fall		
MATH 161	Calculus I	4
Science Requirement		3
	Hours	**7**
Spring		
MATH 162	Calculus II	4
MATH 201	Introduction to Discrete Mathematics & Number Theory	3
Science Requirement		3
	Hours	**10**
Year 2		
Fall		
MATH 263	Multivariable Calculus	4
MATH 215 or COMP 170	Object-Oriented Programming with Mathematics or Introduction to Object-Oriented Programming	3
	Hours	**7**
Spring		
MATH 212	Linear Algebra	3
MATH 264	Ordinary Differential Equations	3
	Hours	**6**

Year 3

Fall

MATH 313	Abstract Algebra	3

STAT 203
    or MATH 304
	Introduction to Probability & Statistics
	    or Introduction to Probability
		3

	Hours	**6**

Spring

MATH 314
    or MATH 315
	Advanced Topics Abstract Algebra
	    or Advanced Topics in Linear Algebra
		3

300-level Major Elective		3
	Hours	**6**

Year 4

Fall

MATH 351	Introduction to Real Analysis I	3
300-level Major Elective		3
	Hours	**6**

Spring

MATH 352
    or MATH 353
	Introduction to Real Analysis II
	    or Introduction to Complex Analysis
		3

For students in departmental honors: Additional 300-level math class		
	Hours	**3**
	Total Hours	**51**

College of Arts and Sciences Graduation Requirements

All Undergraduate students in the College of Arts and Sciences are required to take two Writing Intensive courses (6 credit hours) as well as complete a foreign language requirement at 102-level or higher (3 credit hours) or a language competency test. More information can be found here (https://www.luc.edu/cas/college-requirements/).

Additional Undergraduate Graduation Requirements

All Undergraduate students are required to complete the University Core, at least one Engaged Learning course, and UNIV 101. SCPS students are not required to take UNIV 101. Nursing students in the Accelerated BSN program are not required to take core or UNIV 101. You can find more information in the University Requirements (https://catalog.luc.edu/undergraduate/university-requirements/) area.

Learning Outcomes

- Students will have wide knowledge of and strong skills in using the methods and tools that form the foundation of math. These include calculus, linear algebra, and differential equations, as well as statistics and computer sciences.
- Students will acquire analytical and logical skills that form the basis of mathematical thinking and reasoning. These skills will enable problem solving, the abstraction to general principles from specific examples, and the ability to use formal mathematical language. Students will be able to apply these skills in a variety of contexts.
- Students will be fluent in the traditional mathematical subjects such as abstract algebra and real analysis. They will be able to use the methods and terminology in these field to read and write formal, logical proofs, and to communicate these both in writing and verbally.
- Students will understand how different sub-disciplines of mathematics fit together. They will be able to use their knowledge in a variety of modern applications, both within math and in related disciplines such as science, engineering and tech. They will also be able to place these in a historical context.