MATHEMATICS AND COMPUTER SCIENCE (BS)

The B.S. in Mathematics and Computer Science provides students with a strong foundation in both fields. Core courses from the Mathematics and Computer Science curricula will aid students to develop critical thinking and communication skills, as well as a technical and practical understanding of programming and algorithm design. Graduating students will be prepared for any industry jobs requiring scientific computing skills and the ability to analyze, design, and implement algorithms, such as data mining, finance, and risk analysis. This major also prepares students for advanced degrees in computer science, mathematics, and the STEM fields.

Related Programs

Major

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

Combined

- Mathematics and Computer Science/Applied Statistics (BS/MS) (https://catalog.luc.edu/undergraduate/accelerated-bachelors-masters-program/mathematics-computer-science-bs-applied-statistics-ms/)
- Mathematics and Computer Science/Mathematics (BS/MS) (https://catalog.luc.edu/undergraduate/accelerated-bachelors-masters-program/mathematics-computer-science-mathematics-bs-ms/)

Curriculum

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

Code	Title	Hours
Math 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 263	Multivariable Calculus	4
MATH 264	Ordinary Differential Equations	3
MATH 313	Abstract Algebra	3
MATH 351	Introduction to Real Analysis I	3
STAT 203	Introduction to Probability & Statistics	3
or MATH 304 / STAT 304	Introduction to Probability	
Select two electives in mathematics from the following:		6
MATH 309	Numerical Methods	
MATH 314	Advanced Topics Abstract Algebra	
MATH 315	Advanced Topics in Linear Algebra	
MATH 318	Combinatorics	
MATH 331	Cryptography	
MATH 352	Introduction to Real Analysis II	
MATH 353	Introduction to Complex Analysis	
MATH 356	Introduction to Mathematical Modeling	
MATH 358	Introduction to Optimization	
MATH 365	Introduction to Partial Differential Equations	
MATH 366	Applied Dynamical Systems	
MATH 386	Introduction to Topology	
Computer Science Requirements		
COMP 141	Introduction to Computing Tools and Techniques	3
COMP 170	Introduction to Object-Oriented Programming	3
COMP 264	Introduction to Computer Systems	3
COMP 271	Data Structures I	3
COMP 272	Data Structures II	3
COMP 363	Design and Analysis Computer Algorithms	3
Select two 3-credit electives in Computer Science from the following:		6
BIOL 388	Bioinformatics	
MATH 328	Algebraic Coding Theory	
MATH 331	Cryptography	
STAT 321	Computational Aspects of Modeling and Simulation	
Any 300-level COMP course		
Total Hours		**60**

Note: This degree has a waiver for the Quantitative core.

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 the mathematics and computer science disciplines. These include calculus, linear algebra, and differential equations, statistics, modern computer programming.
- Students will acquire analytical and logical skills in the mathematical and computer sciences. These skills will enable problem solving, the abstraction to general principles from specific examples as well as the ability to design, implement, and evaluate a computational system to meet a given set of requirements.
- Students will understand traditional mathematical subjects such as abstract algebra and real analysis. They will be able to use the methods and terminology in these fields to read and write formal, logical proofs, and to communicate these both in writing and verbally.

- Students will understand the design and analysis of computer algorithms. Students will be exposed to a variety of modern topics which heavily rely on these algorithms and other knowledge of computer science.
- Students will understand how different sub-disciplines of mathematics and different topics learned in computer science fit together. They will be able to use their knowledge in a variety of modern applications.