

# MATHEMATICS (MS)

Loyola's Master of Science in Mathematics degree is a highly customizable program supporting students with a variety of career goals. Beyond delivering foundational knowledge in the discipline, its focus on critical-thinking, organizational, technological, and communication skills leaves students well-prepared for their next step.

## Curriculum

The Master of Science in Mathematics requires 27 credit hours of coursework, a 1 credit professional development seminar during the first semester, and a 2 credit practicum during the final semester, for a total of 30 credit hours.

Coursework includes required foundational courses in algebra, analysis, and statistics, as well as 18 credit hours of electives chosen from courses in Mathematics and cognate fields (such as Applied Statistics, Data Science, and Computer Science). With their practicum, students design and independently execute a research project under faculty supervision.

Code	Title	Hours
<b>Foundational Course Requirements</b>		
MATH 416	Survey of Algebra	3
MATH 454	Survey of Analysis	3
MATH 404 / STAT 404	Probability & Statistics I <sup>1</sup>	3
or STAT 408	Applied Regression Analysis	
<b>Depth Requirement Courses</b>		
<i>Select one of the following:</i>		3
MATH 414	Algebra II	
MATH 415	Topics in Linear Algebra	
MATH 452	Analysis II	
MATH 453	Complex Analysis	
<i>Select one of the following: <sup>1</sup></i>		3
MATH 405 / STAT 405	Probability & Statistics II	
STAT 410	Categorical Data Analysis	
COMP 429	Natural Language Processing	
COMP 487	Deep Learning	
DSCI 401	Introduction to Data Science	
Or Another Course with Graduate Program Director Approval		
<b>Additional Requirements</b>		
MATH 401	Introduction to Graduate Study in Mathematics	1
MATH 495	Graduate Practicum in Mathematics	2
Select four approved 400-level Electives in Mathematics or Statistics <sup>2</sup>		12
<b>Total Hours</b>		<b>30</b>

<sup>1</sup> Students who select MATH 404/STAT 404 in Foundational Courses may opt to take STAT 408 as a Depth Course, and vice versa.

<sup>2</sup> Approved elective courses should be selected with advice of Graduate Program Director to complement student's previous learning and support future plans.

## STEM Designation

The MS in Mathematics has been granted a STEM designation from the U.S. Department of Homeland Security. International students completing degrees with this designation can qualify for extended OPT (Optional Practical Training), bringing the total OPT time granted to 36 months.

## Graduate & Professional Standards and Regulations

Students in graduate and professional programs can find their Academic Policies in Graduate and Professional Academic Standards and Regulations (<https://catalog.luc.edu/graduate-professional-academic-standards-regulations/>) under their school. Any additional University Policies supercede school policies.

## Learning Outcomes

Graduates of the Master of Science in Mathematics Program will:

- be able to construct mathematical proofs of basic theorems, and to write these proofs clearly using correct grammatical constructs and appropriate mathematical notation;
- have seen applications of mathematics to areas across mathematical disciplines and outside of mathematical disciplines;
- receive the training sufficient for acceptance into PhD programs or professional schools, or for hire in mathematics related industries;
- receive training on how to act responsibly and ethically within the discipline.