

FINANCIAL MATHEMATICS, MASTER OF SCIENCE IN ENGINEERING

The financial mathematics master's program at Johns Hopkins is offered through the Department of Applied Mathematics and Statistics as a Master of Science in Engineering (MSE). The program takes three semesters to complete, with students starting in the later summer and finishing in mid-December. Students with a strong quantitative undergraduate background are encouraged to apply for admission (<https://engineering.jhu.edu/ams/graduate-studies/admissions-criteria-admission-process/>) to the program.

The Master's program in Financial Mathematics will provide a solid foundation in applied mathematics, providing the basis for an understanding and appreciation of existing models commonly used in financial applications and inferential and computational tools for developing their solution. The program will also furnish the appropriate insights in Finance where quantitative skills are most germane. The combination of these elements will create a springboard for addressing today's quantitative challenges in finance as well as provide the preparation to meet the challenges of the future.

Program Requirements

For departmental certification for this degree, the student must complete the following courses or approved substitute courses with program approval pursuing either the Area of Focus Track or Legacy Track. Graduate students can also work with their advisors to customize the Area of Focus Track. Please refer to our program website (<https://engineering.jhu.edu/ams/graduate-studies/financial-mathematics-masters-program/program-requirements-schedule/>) for the most current program requirements and information.

Area of Focus Track

Code	Title	Credits
Core Financial Mathematics Requirement		
EN.553.644	Introduction to Financial Derivatives	4
EN.553.645	Interest Rate and Credit Derivatives	4
Core Applied Mathematics Requirement		
EN.553.613	Applied Statistics and Data Analysis	4
EN.553.627	Stochastic Processes and Applications to Finance	4
EN.553.639	Time Series Analysis	3
Electives ¹		
Select seven elective courses ²		21
Financial Mathematics Seminar		
EN.553.847	Financial Mathematics Masters Seminar	1
Total Credits		41

¹ Please see department website for approved electives.

² One course in Applied Mathematics and Statistics, two courses in Financial Mathematics and four additional courses from the approved electives listing or with prior program approval.

In addition to the above course requirements, all students must complete:

- A computing requirement (EN.553.803.01 Financial Computing Workshop)
- The communication skills requirement (Communication Skills Practicum)
- An internship (typically done during summer after first year in residence)
- Course on Responsible Conduct of Research (<https://engineering.jhu.edu/research/resources-policies-forms/online-training-course-responsible-conduct-of-research/>)
- University Orientation and Academic Ethics

Legacy Track

Code	Title	Credits
Core Financial Mathematics Requirement		
EN.553.642	Investment Science	4
EN.553.644	Introduction to Financial Derivatives	4
EN.553.645	Interest Rate and Credit Derivatives	4
EN.553.646	Risk Measurement/Management in Financial Markets	4
or EN.553.648 Financial Engineering and Structured Products		
Core Applied Mathematics Requirement		
EN.553.627	Stochastic Processes and Applications to Finance	4
EN.553.633	Monte Carlo Methods	4
EN.553.613	Applied Statistics and Data Analysis	4
EN.553.639	Time Series Analysis	3
EN.553.661	Optimization in Finance	4
Financial Mathematics Seminar (3 semesters)		
EN.553.847	Financial Mathematics Masters Seminar	1
Electives ¹		
Select three elective courses ²		
Total Credits		36

¹ Please see department website for approved electives.

² One course in Applied Mathematics and Statistics, one course in Financial Mathematics and one additional course with prior program approval.

In addition to the above course requirements, all students must complete:

- A computing requirement (EN.553.803.01 Financial Computing Workshop)
- The communication skills requirement (Communication Skills Practicum)
- An internship (typically done during summer after first year in residence)
- Course on Responsible Conduct of Research (<https://engineering.jhu.edu/research/resources-policies-forms/online-training-course-responsible-conduct-of-research/>)
- University Orientation and Academic Ethics

An overall GPA of 3.0 must be maintained in courses used to meet the program requirements. At most two course grades of C or C+ are allowed to be used, and the rest of the course grades must be B- or better.