

FINANCIAL MATHEMATICS, MASTER OF SCIENCE

Admission Requirements

Applicants must meet the general requirements for admission to graduate study, as outlined in the Admission Requirements (<https://e-catalogue.jhu.edu/engineering/engineering-professionals/admission-requirements/>) section. The applicant's prior education must include:

1. an undergraduate or graduate degree in a quantitative discipline (e.g., mathematics, engineering, or the sciences) from a regionally accredited college or university and
2. at least two years of experience in finance or a related field is suggested.

Applicants must show competency (generally, through their undergraduate transcripts) in:

1. calculus, through multivariable calculus;
2. linear algebra;
3. differential equations;
4. probability and statistics; and
5. computer programming, which must be demonstrated through coursework, MOOC course completion with verification, or work experience.

Applicants whose prior education does not include the courses listed above may still enroll under provisional status, followed by full admission status once they have completed the missing courses. Missing courses may be completed with Johns Hopkins Engineering or at another regionally accredited institution. Admitted students typically have earned a grade point average of at least 3.0 on a 4.0 scale (B or above) in the latter half of their undergraduate studies. Transcripts from all college studies must be submitted. When reviewing an application, the candidate's academic and professional background will be considered.

Program Requirements

Ten courses must be completed within five years. The curriculum consists of five core courses, two elective core courses, and three electives. Elective courses may also be selected from the Financial Mathematics, Applied Computational Mathematics, and Computer Science programs at the 600 level with advisor approval. Certain course substitutions may be accepted upon approval of the Program Chair via the recommendation of a student's advisor. Only one C-range grade (C+, C, or C-) can count toward the master's degree.

Provisional Courses

Code	Title	Credits
EN.625.108 & EN.625.109	Calculus I and Calculus II	8
EN.625.250	Multivariable Calculus and Complex Analysis	3
EN.625.252	Linear Algebra and Its Applications	3
EN.625.240	Introduction to Probability and Statistics	3
EN.605.201 or EN.605.206	Introduction to Programming Using Java Introduction to Programming Using Python	3

Courses

Code	Title	Credits
Core Courses		Credits
EN.555.642 or EN.625.641	Investment Science Mathematics of Finance	3
EN.555.644	Introduction to Financial Derivatives	3
EN.555.645	Interest Rate and Credit Derivatives	3
EN.625.603	Statistical Methods and Data Analysis	3
EN.625.714 or EN.555.627	Introductory Stochastic Differential Equations with Applications (core) Stochastic Processes and Applications to Finance	3
Core Elective Courses (choose at least 2 courses)		Credits
EN.555.646	Financial Risk Management and Measurement	3
EN.625.616	Optimization in Finance	3
EN.625.633	Monte Carlo Methods	3
EN.625.695	Time Series Analysis	3

Please refer to the course schedule (ep.jhu.edu/schedule (<https://apps.ep.jhu.edu/schedule/search/>)) published each term for exact dates, times, locations, fees, and instructors.

Code	Title	Credits
Electives		Credits
EN.555.647	Quantitative Portfolio Theory & Performance Analysis	3
EN.555.648	Financial Engineering and Structured Products	3