

FINANCIAL MATHEMATICS, MASTER OF SCIENCE

This program is only offered online.

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 prerequisites listed above may still enroll under provisional status, followed by full admission status once they have completed the missing prerequisites. Missing prerequisites 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.

Home-to-Hopkins

Home-to-Hopkins students are permitted to substitute Homewood Campus courses to help meet EP program course requirements. Students should work with their faculty advisor to develop a course plan that will satisfy the degree requirements.

Courses

| Code | Title | Credits |
|---------------------|--------------------|---------|
| Core Courses | | |
| EN.555.642 | Investment Science | 3 |

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|---------------|---|---|
| or EN.625.641 | Mathematics of Finance | |
| 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 | Introductory Stochastic Differential Equations with Applications (core) | 3 |
| or EN.555.627 | Stochastic Processes and Applications to Finance | |

Core Elective Courses (choose at least 2 courses)

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|------------|---|---|
| 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 | | |
| EN.555.647 | Quantitative Portfolio Theory & Performance Analysis | 3 |
| EN.555.648 | Financial Engineering and Structured Products | 3 |