QUANTITATIVE FINANCE

WHAT IS A QUANTITATIVE FINANCE B.S. MAJOR?

The B.S. degree with a major in quantitative finance is designed to prepare students for careers in financial engineering, structured finance, financial modeling, securitization, actuarial science, financial analysis and portfolio management.

The focus of this major is on problem-solving in the quantitative areas of finance, with an added emphasis on the application of complex securities to a variety of financial situations.

QUANTITATIVE FINANCE IS...

- a highly structured program, requiring minors in both mathematics and economics, engaging the students in the application of mathematics and economics to financial decision-making
- exploring analytical, technical approaches to problem solving, crucial in the development of the critical thinking skills demanded in the ever-changing financial landscape

CAREER POSSIBILITIES

- Commodities Analyst
- Consultant
- Emerging Markets Derivatives Trader
- Financial Analyst
- Financial Engineer
- Financial Product Designer
- Financial Risk Manager
- Investment Analyst
- Mutual Fund Manager
- Pension Fund Manager
- Portfolio Analyst
- Portfolio Manager
- Quantitative Management Associate
- Research Analyst
- Risk Consultant
- Securities Pricing Analyst
- Securities Trader
- Underwriter

CO-CURRICULAR ORGANIZATIONS

- Madison Investment Fund
- Madison Venture Group
- Financial Management Association
- Beta Alpha Psi

QUANTITATIVE FINANCE IS...

The Quantitative Finance program at JMU is a unique program for undergraduate students that provides rewarding rigor and challenge. This program has given me a vast array of technical skills, and its collaborative environment has allowed me to develop my soft skills such as communication and teamwork.

Michael Habib
James Madison University ’17
Chief Risk Officer, Madison Investment Fund

CONTACT INFORMATION

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### QUANTITATIVE FINANCE/MATHEMATICS DOUBLE MAJOR

<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Mathematics Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>MATH 235 - Calculus I</td>
</tr>
<tr>
<td>Scientific Literacy requirement</td>
<td>MATH 236 - Calculus II</td>
</tr>
<tr>
<td>Free electives</td>
<td>MATH 237 - Calculus III</td>
</tr>
<tr>
<td>Major requirements (listed below) and electives</td>
<td>MATH 238 - Linear Algebra and Differential Equations</td>
</tr>
<tr>
<td><strong>Total 120 credit hours</strong></td>
<td>MATH 248 - Computer Methods in Engineering and Science</td>
</tr>
<tr>
<td><strong>General Degree Course</strong></td>
<td>MATH 318 - Introduction to Probability and Statistics</td>
</tr>
<tr>
<td>COB 241 - Financial Accounting</td>
<td><strong>MATH Elective (Select one)</strong></td>
</tr>
<tr>
<td><strong>Finance Courses</strong></td>
<td>MATH 423 - Stochastic Processes</td>
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<td>FIN 250 - Introduction to Quantitative Finance</td>
<td>MATH 424 - Statistical Decision Theory</td>
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<td>FIN 371 - Principles of Investments</td>
<td>MATH 440 - Fourier Analysis and Partial Differential Equations</td>
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<tr>
<td>FIN 380 - Elemental and Derivative Securities</td>
<td><strong>Economics Courses</strong></td>
</tr>
<tr>
<td>FIN/MATH 395 - Mathematical Finance</td>
<td>ECON 200 - Introduction to Macroeconomics</td>
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<tr>
<td>FIN/MATH 405 - Securities Pricing</td>
<td>ECON 201 - Principles of Microeconomic Theory</td>
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<tr>
<td>FIN 450 - Financial Risk Management</td>
<td>ECON 331 - Intermediate Microeconomic Theory</td>
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<tr>
<td>FIN 480 - Seminar in Financial Engineering</td>
<td>ECON 332 - Intermediate Macroeconomic Theory</td>
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<tr>
<td>FIN Elective (Select one)</td>
<td>ECON 385 - Econometrics (or MATH 322 - Applied Linear Regression)</td>
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<tr>
<td>FIN/MATH 328 - Time Series Analysis</td>
<td>Plus one other upper-level economics elective</td>
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<tr>
<td>FIN/ECON 372 - International Finance and Payments</td>
<td><strong>ECON Elective (Select one)</strong></td>
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<tr>
<td>FIN 451 - Risk Management II</td>
<td>MATH 411 - Advanced Calculus II</td>
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<tr>
<td>FIN 471 - Advanced Topics in Investments</td>
<td>MATH 431 - Abstract Algebra II</td>
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<tr>
<td>FIN 475 - Financial Modeling and Risk Analysis</td>
<td>MATH 435 - Introduction to Topography</td>
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<td>MATH Electives</td>
<td>MATH 441 - Analysis and Dynamics of Differential Equations</td>
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<td>MATH 441 - Analysis and Dynamics of Differential Equations</td>
<td>MATH 426 - Probability and Mathematical Statistics I</td>
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A focus in risk management is designed for quantitative finance majors pursuing a more in-depth review of the issues facing organizations and the tools needed to address those uncertainties.

In the risk management concentration, students focus on the theory of risk management, risk identification, risk measurement and applications in the form of risk modeling techniques such as Value-at-Risk and Monte Carlo simulations.

### Required Courses
- FIN 380 - Elemental and Derivative Securities Analysis
- FIN 450 - Financial Risk Management
- FIN 451 - Risk Management II
- FIN 475 - Financial Modeling and Risk Analysis

FIN 380 and FIN 450 are requirements for quantitative finance majors and FIN 451 and FIN 475 are possible electives for this major.

### Department Highlights
- Gaglioti Capital Markets Laboratory with 11 Bloomberg terminals
- CFA University Recognition program
- Student-run Madison Invest Fund won 1st place in the core investment competition at the 2019 Global Asset Management Education Forum

### Software & Technical Skills
- Bloomberg
- Statistics (SAS)
- Finance Databases such as CRSP and Compustat
- Excel VBA
- Matlab

### QFIN Major with Econ and Math Minors

#### Freshman - 1st Semester
- MATH 235
- ECON 200
- GenEd

#### Freshman - 2nd Semester
- ECON 201
- COB 241
- MATH 236
- GenEd

#### Sophomore - 1st Semester
- MATH 237
- GenEd
- GenEd
- GenEd

#### Sophomore - 2nd Semester
- FIN 250
- MATH 238
- MATH 248
- GenEd

#### Junior - 1st Semester
- FIN 365*
- FIN 371*
- FIN 380*
- ECON 331
- GenEd

#### Junior - 2nd Semester
- FIN 395
- ECON 332
- ECON 385
- GenEd
- GenEd

#### Senior - 1st Semester
- FIN 405
- FIN 450
- MATH Elective
- GenEd
- GenEd

#### Senior - 2nd Semester
- FIN elective
- FIN 480
- Economics Elective
- GenEd

### Financial Risk Management Concentration

#### Junior - 1st Semester
- FIN 365*
- FIN 371*
- FIN 380*
- ECON 331
- GenEd

#### Junior - 2nd Semester
- FIN 395
- ECON 332
- ECON 385
- Economics Elective
- GenEd

#### Senior - 1st Semester
- FIN 405
- FIN 450
- FIN 475
- MATH Elective
- GenEd

#### Senior - 2nd Semester
- FIN 451*
- FIN 480
- GenEd
- GenEd

* FIN 365, FIN 371 and FIN 380 requires a minimum of a C in FIN 250; FIN 450 requires a B- in FIN 380; FIN 451 requires a B- in FIN 450
Average Starting QFIN Salary: **$69,825**
Average Starting CoB Salary: **$57,837**
% CoB Jobs with Signing Bonus: **58%**
Average CoB Signing Bonus: **$5,580**

95% of CoB graduates are employed, in continuing education or engaged in other career related endeavors.

The Class of 2018 includes 800 students graduating August 2017, December 2017 and May 2018.

Updated 9/2019