

Financial Analysis and Quantitative Risk Management (M.S.)

About The Program:

The M.S. in Quantitative Finance and Risk Management is an interdisciplinary program in the Fox School of Business and Management. The curriculum combines studies in financial theory, mathematical modeling, computational methods, and global markets.

Career Options: Professionals with a Quantitative Finance and Risk Management focus are distinctively qualified to contribute in financial modeling, information technology, institutional risk management, portfolio management, securities trading and sales, and more.

Prerequisites for Admission: A strong record of achievement in quantitative coursework, including Multivariate Calculus, Linear Algebra, and Advanced Statistics and Probability, is required. Prior or anticipated exposure to Finance and Computer Programming is also required.

Requirements of Programs:

- **Total Credit Hours:** 30
- **Culminating Events:**
Successful completion of coursework is required to earn the M.S. in Quantitative Finance and Risk Management degree.

Year 1

Fall (Finance Academy, August)

Corporate Finance – This course reviews economic principles governing financial markets and corporate management and develops financial analysis skills. Topics include capital budgeting and cost of capital.

Derivative Markets – This course covers global exchange-traded and over-the-counter futures, options and swap instruments and financial applications. Topics include option investment strategies and structured swap applications.

Fixed Income – This course examines the features and trading behavior of global fixed income markets. Topics include features of debt securities, bond valuation, interest rate risk immunization and foreign exchange.

Stochastic Calculus Finance – This course covers the mathematical foundations of stochastic calculus with financial applications. Topics include Brownian motion, stochastic integrals and stochastic differential equations.

Fall Term

Financial Technology – This course teaches specialized financial software, financial market databases and quantitative financial tools. Financial Technology may be repeated up to one credit hour.

Asset Pricing – This course examines the relationship between financial risk and rates of return. Topics include equilibrium and empirical approaches to asset pricing and international asset pricing.

Continuous Time Finance – This course covers continuous-time financial theory and option pricing methods. Topics include risk-neutral pricing and equilibrium asset pricing.

Quant Fixed Income – The course covers the mathematics driving fixed income markets. Topics include term structure modeling, interest rate immunization and fixed income derivatives.

Structured Finance – This course covers the valuation of asset-backed securities and credit derivatives. Topics include mortgage-backed securities, credit default obligations and credit default swaps.

Numerical Methods – This course examines numerical lattice, Monte Carlo and finite difference methods for pricing vanilla and exotic options. Topics include implied trinomial trees and variance reduction techniques.

Financial Econometrics – This course examines linear regression and time series models with applications to corporate finance and investments theory. Topics include interpreting regression coefficients and estimating correlation and volatility using GARCH models.

Value at Risk – This course examines advanced quantitative methods for estimating the risk of financial loss and risk management applications. Topics include scenario analysis, incremental risk and VaR back testing techniques.

Financial Risk Management I – This course explores the FRM Program's Part I Curriculum covering the tools used to assess financial risk: quantitative analysis, fundamental risk management concepts, financial markets and products, and valuation and risk models.

Professional Development – This course examines the importance of professional growth to the financial analyst. Topics include career development goals, effective professional communication, leadership and management skills and ethical issues specific to careers in finance.

Spring Term

Financial Time Series – This course teaches methods for analyzing time series data and for forecasting future events. The course offers a mix of financial data analysis together with statistical theory.

Stochastic Volatility – This course examines alternative models of implied volatility and model calibration to observed market data. Topics include the term structure of volatility and jump diffusion models of the volatility smile.

Quantitative Risk Modeling – This course covers advanced quantitative analysis and assessment of market, credit and operational financial risks. Topics include hedging exotic options and default risk measures.

Alternative Investments – This course explores proprietary hedge fund strategies and performance measures. Topics include relative value strategies, distressed debt and real estate investment trusts.

Structured Products – This course teaches the financial engineering of structured product and hybrid security offerings. Topics include exotic derivatives and tailored investment strategies.

Enterprise Risk Management – This course covers the analysis and development of a best in practice enterprise-wide risk management system. Topics include corporate risk tolerance and strategic risk and capital management issues.

Financial Risk Management II – This course examines the FRM Program's Part I and Part II Curriculum focusing on the application of financial risk management tools.

Courses:

Click [HERE](#) for more information on the courses below.

- Financial Analysis and Strategy
- Fixed Income Analysis
- Management of Financial Institutions
- Financial Risk Management
- Advanced Corporate Finance
- Advanced Option Theory
- Interest Rate Options
- Derivatives
- Investments
- Mergers and Acquisitions
- Capital Struc Business
- Financial Analysis & Planning
- Financial Markets and Institutions
- Financial Modeling for Investments and Corporate Finance
- Financial Modeling: Corporate
- Portfolio Analysis
- Project Analysis & Valuation
- Mergers, Acquisitions and Restructurings
- Continuous Time Finance
- Financial Markets and Institutions I
- Financial Markets and Institutions II
- Working Capital Management Strategies
- Corporate Governance and Financing Decisions
- Financial Risk Management I: Application of Futures
- Global Finance I: Markets
- Global Finance II: Management
- Securities Analysis
- Int'l Fin Mkt & Corp Fin
- Private Equity
- Special Topics
- Special Topics Finance
- Independent Study
- Understanding the Finance of Business
- Valuation for Business Decisions Opportunities
- Practicum in Financial Analysis and Strategy
- Understanding the Finance of Business
- Valuation for Business Decisions Opportunities
- International Financial Markets
- International Financial Management
- Financial Technology
- Corporate Finance
- Financial Accounting
- Derivative Markets
- Fixed Income
- Stochastic Calculus & Finance
- Ethics and Leadership I
- Ethics and Leadership II

- Asset Pricing
- Derivative Valuation
- Continuous Time Finance
- Financial Institutions & Risk
- Corporate Value Management
- Quant Fixed Income
- Structured Finance
- Risk Measurement
- Numerical Methods
- Financial Econometrics
- Global Economy
- Value at Risk
- Financial Time Series
- Investment Management
- Stochastic Volatility
- Applied Corporate Finance
- Behavioral Finance
- Quantitative Risk Modeling
- Alternative Investments
- Entrepreneurial Companies
- Structured Products
- Financial Reporting & Analysis
- Quantitative Portfolios
- Enterprise Risk Management
- Financial Analysis I
- Financial Analysis II
- Financial Risk Management I
- Financial Risk Management II
- Professional Development
- Special Study in Finance
- Special Topics in Finance
- Financing the Enterprise
- Enterprise Financial Management
- Independent Study
- Special Topics
- Corp Finance Theory
- Empirical Research in Corporate Finance
- Banking and Financial Institutions
- Seminar in Global Finance and Governance
- Empirical Asset Pricing
- Proseminar in Finance
- Alternative Investments
- Best Practices in Valuation
- Corporate Governance
- Derivatives and Risk Management
- Dissertation Methodologies
- Financial Markets and Institutions
- Investment Allocation and Management
- Mergers and Acquisitions
- Private Equity
- Real Estate Finance
- Spec Topic Finance
- Directed Study in Fin