

FINANCIAL ENGINEERING

COLLEGES OF AGRICULTURE & ENGINEERING | MONTANA STATE UNIVERSITY

DOES FINANCIAL ENGINEERING MATCH YOUR INTERESTS?

Not sure whether business, economics, or engineering is right for you? Then financial engineering might be the perfect fit! Financial engineers work at the intersection of all three, bringing an engineering analysis toolset to business and economics problems.

Whether you work for an existing company or start your own, a Financial Engineering degree will provide you with the knowledge and tools to manage market risk, create strategic business opportunities, lower costs, and access new markets.

MULTIDISCIPLINARY

Financial Engineering is an interdisciplinary field, drawing upon tools from applied mathematics, economic theory, computer science, and engineering modeling. The program at MSU is jointly administered by the Department of Mechanical and Industrial Engineering and the Department of Agricultural Economics and Economics, and you will take engineering, economics and computer science courses as you complete your degree.

MANAGING RISK

Risk management is essential in today's highly leveraged domestic markets as well as the global business environment. As a Financial Engineering major, you will be prepared for complex financial economic modeling and analysis. You will also receive rigorous training in financial economics, engineering mathematics, and actuarial methods that can be applied in many contexts.

OPPORTUNITY

As a financial engineer, you will find opportunities to work in banking, corporate finance, securities, insurance, manufacturing, agriculture, or other industries that require sophisticated financial management skills. Seeking a competitive edge, regional industries as well as national and international firms will be increasingly likely to hire financial engineers with skills to handle the complexity and sophistication of business risk management in a global environment.

IN DEMAND

The demand for financial engineering graduates is high with a forecasted growth rate of 18 to 20% annually over the next seven years, according to the Bureau of Labor Statistics' *Occupational Outlook Handbook*. Starting salaries are extremely competitive.

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1 Financial engineers work collaboratively with others to solve complex financial and risk management problems. 2 A growing area for financial engineers is the analysis of big data to find new business opportunities. 3 Financial engineers work in a variety of industries, analyzing new opportunities. 4 Financial engineers are well-prepared to perform the complex analyses needed in today's business environment.

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Our graduates find job opportunities in

- Asset management firms
- Investment banks (national and international)
- Commercial banks (regional and national)
- Hedge funds
- Insurance companies
- Investment firms
- Credit card companies
- Finance divisions of major corporations,
- Regulatory agencies
- Securities firms
- Securities and Exchange Commission
- Trading companies

Financial engineers hold job titles of

- Actuary
- Business analyst
- Business information specialist
- Financial analytics engineer
- Financial application engineer
- Securities analyst
- Quantitative research analyst
- Technical consultant
- Research associate
- Risk manager
- And more

CURRICULUM

As a Financial Engineering student, you'll take courses in a number of departments across several colleges. Since the curriculum is continually updated to match pace with new developments in the field, it is best to refer to the Financial Engineering web page for the most current information: <http://www.coe.montana.edu/ie/efin/>. From there, you can access the online catalog, explore the suggested class schedule for each year as an undergraduate and delve into course descriptions.

- Financial engineering majors gain a strong grounding in mathematics, science, economics and computing fundamentals in the first two years.
- You build on these fundamental topics by taking the analytical core courses from the Industrial and Management Systems Engineering curriculum, including applied statistics, operations research, and forecasting.
- In addition to engineering courses, the program combines economics courses such as macro- and microeconomics, money and banking, and econometrics along with specialized knowledge in financial engineering. Topics include pricing models, portfolio analysis, options and derivatives, asset valuation, financial performance evaluation, and risk measurement.
- The Financial Engineering program offers technical and professional electives that allow you to tailor your degree to your interests, such as incorporating business finance classes and adding advanced courses in engineering, economics, computer science or mathematics.
- The program culminates in a capstone experience where you apply all that you've learned in a comprehensive senior project.
- To help you better understand the larger social context in which you are solving problems, you'll also complete 15 credits of humanities, social science, and fine arts core classes.

LENGTH OF STUDY AND PREP FOR GRAD SCHOOL

The curriculum is designed to be completed in four years. The program prepares students for entry level financial engineering positions and is an excellent precursor for graduate studies in financial engineering and related fields.



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5 Many Financial Engineering students find careers in banking and finance.

