OR649 Topics in Operations Research
SYST 659 Topics in Systems Engineering

Financial Engineering - Introduction to Derivatives and Risk Management

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Department of Systems Engineering and Operations Research

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Course Description: This course introduces special topics in financial engineering. Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions, as well as facilitating the risk management of those decisions. This course will introduce basic concepts of options, futures, and financial derivatives markets. It will also cover a broad range of derivatives and discussed how risks are managed in financial institutions. While mathematics is indispensable in financial engineering, this course will try best to focus on the concepts and ideas of finance, while limiting the math within a scope acceptable to most students in engineering.

Prerequisites: Graduate standing (Undergraduate engineering math: Calculus, probability theory, and some basic computer programming skills. Some background in financial markets would also be helpful, but not necessary.)

Textbooks:

Required:

1. John. C. Hull, "*Options, Futures, and Other Derivatives*"; 8th edition, 2011;

Recommended:

2. Salih N. Neftci, "*Principles of Financial Engineering*"
3. Mark S. Joshi, "*The concepts and practice of mathematical finance*"
4. David G. Luenberger, "*Investment Science*"
5. Martin Baxter and Andrew Rennie: "*Financial Calculus: An Introduction to Derivative Pricing*"