

MATH 486 / 586
Risk Management and Financial Engineering (3 units)

Course Outline

Topics	# of Weeks
Cash Flow Engineering and Forward Contract	1.0
Engineering Simple Interest Rate Derivatives	1.0
Introduction to Swap Engineering	1.0
Pricing Tools and Financial Engineering	1.0
Some Application of the Fundamental Theorem	1.0
A Framework for Fixed-Income Engineering:	
1. Framework for Swaps	2.0
2. Term Structure Modeling	
3. Measure Change Techniques	
Risk Measures: Value at Risk and Conditional Tail Expectation	1.0
Monte Carlo Valuation of Derivative Securities	2.5
Swaptions	0.5
Portfolio Management: Risk and Expected Return on Portfolio:	
1. Risk and Expected Return on a Portfolio	2.0
2. Efficient Frontier	
3. Capital Asset Pricing Model	
Exams and Presentations:	1.0

Textbook: Derivative Markets, 2nd Edition, by McDonald
Laboratory Materials for Mathematical Finance Using Excel, by Ohoe Kim
Principles of Financial Engineering, by Salih N. Neftci

Requirements: Graduate students need to complete an additional project on a selected topic. Computer laboratories are an integral part of the course.

Adopted: March 2007