THE COLLEGE OF STATEN ISLAND
DEPARTMENT OF MATHEMATICS
COURSE OUTLINE
MTH 416 - MATHEMATICS OF FINANCE

TEXT: Baxter, Rennie, Financial Calculus, Cambridge University Press, 2002

Note: Each numbered lesson corresponds to a two-hour class.

Lesson	Pages	Topics
1	1-2	The parable of the bookmaker
2	Handout	Review of probability and statistics I: discrete probability distributions
3	Handout	Review of probability and statistics II: continuous probability distributions
4	3-9	Principle of arbitrage
5	10-17	Binomial branch model
6	18-28	Binomial trees
7	29-41	Binomial representation theorem, Martingales
8	42-44	From the discrete to the continuous model
9		Review for Exam 1
10	Exam 1	
11		Discussion of Exam 1
12	45-50	Brownian motion
13	51-56	Stochastic processes
14	57-62	Itô calculus

Lesson	Pages	Topics
15	Handout	Examples of stochastic differential equations
16	63-75	Change of measure - Radon-Nikodym derivatives
17	76-79	Martingale representation theorem
18	80-83	Construction strategies
19	83-91	Black-Scholes model
20	92-98	Black-Scholes in action
21		Review for Exam 2
22	Exam 2	
23		Discussion of Exam 2
24	99-105	Foreign exchange
25	106-111	Equities and dividends
26	112-115	Bonds
27	116-121	The market price of risk
28		Review for Final