Mathematics of Finance
V63.0250 – Fall, 2003

**Professor:** Robert Kohn, 612 WWH, 8-3217, kohn@cims.nyu.edu. Office hours: Mondays and Wednesdays 10-11am.


**Goal:** This class introduces students to some central ideas of quantitative finance, including portfolio optimization, stochastic models of asset prices, and arbitrage pricing of derivative securities. In the process, it also introduces students to relevant mathematical techniques such as linear and quadratic programming, basic probability, convex optimization, and diffusion processes.

**Prerequisites:** Calculus I-II and Linear Algebra are required. Calculus III is also required but may be taken simultaneously. Some prior exposure to probability or statistics will be helpful. Students with substantial knowledge of economics and finance may find this course too basic; such students may wish to take the graduate math class Derivative Securities instead.

**Course requirements:** Homework assignments; midterm exam; final exam.

**Textbook:** David Luenberger, *Investment Science*, Oxford University Press, 1998. This book is far from perfect, but it’s the only text I know with the appropriate level and breadth.

**Also recommended:** Sheldon Ross, *An Elementary Introduction to Mathematical Finance: Options and Other Topics*, second edition, Cambridge University Press, 2003. Narrower than Luenberger, and more uneven; but students with little prior exposure to probability will find the first 3 chapters particularly useful.

A book that’s more elementary, but very thoughtful and thought-provoking, is Mark Kritzman, *Puzzles of Finance: Six Practical Problems and their Remarkable Solutions*, John Wiley & Sons, 2000. I’ll use it as a point of departure for several lectures.

**Library reserve:** The books by Luenberger and Ross are on reserve in the CIMS library. (Kritzman is not – but note that it’s available in paperback for just $20.)