COURSE OBJECTIVE

The objective of this course is to introduce some theoretical and computational methods for and static and dynamic portfolio optimization and risk management problems. The stress will be put on methods that proved successful in applications. While the course will focus on stochastic dynamic models in discrete time, it will be self-contained in the sense that no specific knowledge of optimization theory and asset pricing will be required. Familiarity with linear algebra and probability theory is necessary. The course will provide the students, who are interested in broadening their knowledge on mathematical and computational methods in finance, a theoretically sound and practically useful introduction to these issues.

COURSE MATERIALS


A number of articles on stochastic dynamic optimization.

FINAL GRADE ASSIGNMENT

Homework will be assigned twice a month as a means to help you understand the concepts and to give you practice in applying them. There will also be a final project. Homework assignments and other information can be obtained from the course Web page http://www.rusz.rutgers.edu/orf.htm
Quantitative Finance (22:839:663)

COURSE SCHEDULE

Linear programming.
The AMPL modeling language.
Integer programming.
Nonlinear programming.
Duality.
The static portfolio selection problem. Two-fund and one-fund theorems.
Stochastic dominance and mean--risk models.
Value at Risk.
Two-stage stochastic programming models.
Multi-stage stochastic programming models.
Simulation-based methods.