Department: Mathematics and Computer Sciences
Division: Applied Mathematics
Level and Major: Graduate

Course Title: Special Topics in Financial Mathematics
Number of Credits: 3
Prerequisite: Group Permission
Lecturer:

Course Description:

Course Goals and Objectives:

Course Topics:

- Linear programing, Introduction to GAMS software
- Application of linear programming in finance (Net present value, Balacne sheet, Cash flow management, Payment for a loan)
- Multiobjective programming
- Tehran Securities Exchange
- Portfolio optimization, Mean-variance Markovitz model, Linear return and log return, Implementaion on real data
- Models and mathematical logic
- Auction, Lockbox
- Improvements of Markovitz model (short sales, Diversification, Beta coefficient, Transaction cost, Network-based models)
- Two-stage and multi-stage stochastic programming, Nonanticipativity constraints
- Wait-and-See, Expected-Value and Here-and-Now", The value of information and the stochastic solution
- Scenario generation, Scenario reduction, In-sample stability, Out-of-sample stability, Arbitrage
- Risk measures safety measures, MAD, VaR, CVaR
- Portfolio rebalancing, Index tracking
- Cash management in ATMs, Liability and asset management
- Probabilistic Programming

Reading Resources:

Evaluation: