Outline

The emphasis of the course is on modeling and optimization as tools for financial decision making. The objective is to help students develop basic skills in problem solving and quantitative analysis.

Prerequisites:
Probability and calculus (at the level of an undergraduate engineering program).

Required text:


References:


Topics and Schedule (subject to changes):

- Lectures 1-2: present value analysis, bond price-yield curve, dynamic optimization (Part I);
- Lectures 3-4: mean-variance portfolio theory, Markowitz model (Part II, notes);
- Lectures 4-5: Capital asset pricing model, log-optimal pricing (Part II);
- Lectures 6-7: lognormal distribution, Brownian motion and geometric BM, Itô’s lemma, stock price dynamics, Black-Schoes model (Part III, notes);
- Lectures 8-9: Black-Schoes model cont’d, binomial trees, finite difference method (Part III, Hull, notes);
- Lectures 10-11: multiperiod and continuous-time models (Part IV);
- Lecture 12: summary and review.
Evaluation:

- Homework assignment: 20%.
  (Unless otherwise specified, each set is due in two weeks; 100% credit if returned on time.)
- Midterm exam: 40% (“aid sheet” format; Oct. 28).
- Final exam: 40% (“aid sheet” format; Dec. 16).

Office Hours:
10:30am-12:30pm, Monday.

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