Statistics  888
Spring  2014

Stochastic Models in Finance.

Instructor: Shlomo Levental. Tel: 3558727. Email: levental@stt.msu.edu.

Time and Place: M, W, F  11:30-12:20  at A220 Wells Hall

Objective: The purpose of the course is to teach stochastic methods and techniques that are used in modern Finance. Those stochastic techniques are also widely used in many other fields like: Mathematical Sciences, Engineering, Operation research, Economics and Sciences. The prerequisite is the Calculus-based Stat 441 or a similar introductory course in Probability.

Audience: Graduate students in Finance, Statistics, Mathematics, Economics, Computer Science, Engineering and Sciences.
Remark for students who are interested in career in Actuary: This course will be useful in preparation for exam MFE.

Office Hours: Monday  12:30-1:20,
Wednesday  12:30-1:20,
and by appointment.

Topics :
1. Finance in discrete time: Arbitrage pricing theory, complete and incomplete markets, The Binominal model, calibration of parameters as time shrinks and Log-Normal approximation, Black-Scholes formula and its analysis, American style options and Trinominal models.

2. Introduction to Ito Calculus: Brownian motion, stochastic integrals and Ito formula.


4. More advanced topics in continuous time Finance as time permits: Portfolio theory, Term-structure models, pricing interest rate options.
**Grading:** It will be based on homework assignments. There will be several sets of problems throughout the semester. There will not be in class exams.

**References**

2. Steven E. Shreve: Stochastic Calculus for Finance II: Continuous time models. Springer.


**Important Dates Spring 2014:**

January 8 Classes begin; late enrollment fee begins

January 10 Close of add period

January 20 Martin Luther King Day (No Classes)

January 31 Last Day for 100% Refund

February 26 Middle of the Semester; last day to drop with no grade

March 3-7 Spring Break

April 25 Last Day of Classes