SS/MA 214 "MATHEMATICAL FINANCE"

Instructor: Jakša Cvitanić; 319 Baxter, 395-1784, cvitanic@hss.caltech.edu
Office Hours: Wed 2:00, or by appointment

Class meetings: Mo Wed 2:30-3:55PM.

Prerequisites: A solid knowledge of probability, at a level of an upper level undergrad course. Some exposure to stochastic processes, real analysis/measure theory and partial differential equations is helpful, but not mandatory.

Grading: 40% homeworks, equally weighted, 60% final exam. For those taking the course on Pass/Fail: you must pass the final and you must receive 50% of the grade for each homework to pass the course. Penalty for late submission of homework: 10% per day. Penalty for late submission of final: 33% per day.

Collaboration Policy: Discussions of class material are allowed; on homeworks fellow students can give hints - but please report them; no collaboration allowed on the project/final, unless it's a group project. Homeworks and final are open-book, open-notes. You are not allowed to consult others on the final.

Course Material:

The main textbook is

S. Shreve: Stochastic Calculus for Finance II : Continuous-Time Models

However, we will not always follow the textbook closely. We will use other books, lecture notes and research papers, too, such as:

J. Cvitanic "Theory of portfolio optimization in markets with frictions". (Lecture Notes)

Students who are interested in additional computational, economics and mathematical aspects can also consult the following books:

J. Cvitanić and F. Zapatero: Introduction to the Economics and Mathematics of Financial Markets (introductory level)

K. Back: Asset Pricing and Portfolio Choice Theory (intermediate/advanced)

T. Bjork: Arbitrage Theory in Continuous Time (intermediate/advanced)

I. Karatzas and S. Shreve: Methods of Mathematical Finance (advanced)

Moreover, for models with jump processes, one can consult

R. Cont and P. Tankov: Financial Modelling with Jump Processes