SS/MA 214 "MATHEMATICAL FINANCE"

Instructor: Jakša Cvitanić; 203 Baxter, 395-1784, cvitanic@hss.caltech.edu

Class meetings: Mo, Wed, 5:05-6:30PM

Prerequisites: A solid knowledge of probability, at least an upper level undergrad course. Some exposure to stochastic processes, real analysis/measure theory and partial differential equations is helpful, but not strictly 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. Cvitanić "Theory of portfolio optimization in markets with frictions". (Lecture Notes, that will be provided)

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