Synopsis

This course covers modern continuous-time models for portfolio selection and asset pricing. It includes the following topics: a review of stochastic calculus including martingale theory, Ito’s calculus and stochastic differential equations; an introduction of stochastic control theory mainly involving dynamic programming HJB equations; the Black-Scholes market model; arbitrage and market completeness; Markowitz’s mean—variance portfolio selection model; Merton’s utility maximization model; market equilibrium and capital asset pricing; option pricing and Black—Scholes formula; foreign exchange models and pricing quanto options.

Prerequisite


Textbooks

I will write my lecture notes taking material from several sources. These notes will be made available to the class. The main reference books are