MT-451 Continuous-Time Finance

Introduction to portfolio selection and capital market theory (static analysis): introduction, one-period portfolio selection, spanning, separation, and mutual-fund theorems, on the mathematics and economics assumptions of continuous-time models; continuous-sample-path processes with “no rare events”, discontinuous-sample-path processes with “rare events”, lifetime portfolio selection under uncertainty (the continuous-time case): dynamics of the model, the budget equation, constant relative risk aversion, infinite time horizon, extension to many assets, constant absolute risk aversion, optimum consumption and portfolio rules in a continuous-time model: a digression on its processes, asset-price dynamics and the budget equation, optimal portfolio and consumption rules, the equations of optimality; log-normality of prices and the continuous-time analog to tobin-markowitz mean-variance analysis, noncapital gains income, wages. Poisson processes, alternative price expectations to the geometric brownian motion, conclusion, further developments in the theory of optimal consumption and portfolio selection: the cox-huang alternative to stochastic dynamic programming, optimal portfolio rules when the non-negativity constraint on consumption is binding, generalized preferences and their impact on optimal portfolio demands.

Recommended Books: