

MATH 7380-3: Applied Stochastics

Time: Tuesday and Thursday 1:40–3:00

Room: Ag. Admin. Bldg. 204

Prerequisite

Math 3355 and Math 4031

Textbook

Kuo, H.-H.: Introduction to Stochastic Integration. Universitext, Springer, 2005

Coverage

We will study the basic theory of stochastic integration with several applications to finance and other fields. Many concrete examples will be used to motivate the concepts and theorems. We will assume the advanced calculus and elementary probability theory. Basic knowledge of measure theory and Hilbert space will be helpful, but is not absolutely necessary. Below are some items to be covered in this course:

1. Brownian motion
2. Construction of Brownian motion
3. Wiener integrals
4. Itô's integrals
5. Stochastic integrals for martingales
6. The Itô formula
7. Girsanov theorem
8. Wiener-Itô theorem
9. Stochastic differential equations
10. Hedging portfolio
11. Arbitrage and option pricing
12. Black-Scholes analysis

Grading

The grade will be determined by homework assignments (65%) and the final exam (35%) with the tentative scale: A 90%; B 80%; C 70%

Professor H.-H. Kuo

Office: Lockett 318

Office hours: MW 2:00–3:00 and TTh 9:00–10:00

Telephone number: 578–1610

E-mail: kuo@math.lsu.edu

Website: <http://www.math.lsu.edu/~kuo>