Numerical Computations of Stochastic Differential Equations

Department: MATH
Course Number: 8823-ZHO
Hours - Lecture: 3
Hours - Lab: 0
Hours - Recitation: 0
Hours - Total Credit: 3
Typical Scheduling: Not regularly scheduled
Description:
Special Topics Spring 2012 by Hao Min Zhou
Prerequisites:

Math 4211 or Math 4255 or Math 7244 or equivalent, and Math 4640.

Course Text:
At the level of "Numerical Solution of Stochastic Differential Equations by Kloeden and Platen.
Topic Outline:

1, Reviews of basics in stochastic calculus.

2, Stochastic differential equations, Fokker-Planck equations.

3, Numercial schemes for stochastic ODE's.

4, Monte Carlo simulations.

5, Moment equations and closure problems.

6, Polynomial chaos expansions, deterministic methods for stochastic
differential equations, stochastic finite element methods.

7, Stochastic equations in optimizations.

8, Fokker-Planck equations on graphs.