Stochastic Calculus: Syllabus

Samy Tindel

Purdue University

Stochastic calculus - MA598

Outline

Outline

Nancy 1

Nancy, France - Google Maps 04/09/13 05:45

Google Address **Nancy**

My Purdue information

Office: 434, Math building

Email: stindel@purdue.edu

Office hours: Thursday 1:30-3:00pm

Webpage: https://www.math.purdue.edu/∼stindel/

Advertising stochastic calculus

Stochastic differential equations:

- Interesting from a mathematical point of view
  - Related to martingales, Markov property
  - Differential equations driven by non differentiable processes
  - Links to partial differential equations
  - Analysis on infinite dimensional Gaussian spaces
- Crucial for modeling randomness
  - Finance
  - Theoretical and applied physics

Great names related to the field:

- Kolmogorov, Wiener, Itô, Levy, Doob

Recent Fields medallists:

- Werner, Villani, Hairer

Brief outline of the course

Chapters covered:

1. Probability preliminaries.
2. Brownian motion.
3. Itô's formula.
4. Stochastic differential equations.
5. Analysis on the Wiener space.

Bibliography:

1. R. Durrett: Stochastic calculus. A practical introduction.
2. I. Karatzas, S. Shreve: Brownian motion and stochastic calculus.
3. D. Revuz, M. Yor: Continuous martingales and Brownian motion.

Outline

Webpage

Course webpage:

`https://www.math.purdue.edu/~stindel/teaching/stoch-calc/stoch-calc.html`

Evaluation

Homework:

- Hand-graded, every two weeks, due on Tuesday

Projects:

- Read some book chapters or articles
- Report and presentation in class

Grades

Total score calculation:

- Homework 200 pts.
- Projects 400 pts.

Attendance and withdrawal

Attendance:

- Class attendance is expected.
- Reading textbooks ahead of time is strongly recommended.

Other topics

Accommodations for students with disabilities:

- Be certified by the Disability Resource Center (DRC) as eligible for academic adjustments on exams or quizzes.
- Contact me.

Campus Emergency Notice: see
`www.math.purdue.edu/MA266` (*Click here*)