

**PROBABILITY II**  
**MATH 83200**  
**CUNY GRADUATE CENTER, FALL 2017**

**Instructor:** Prof. Louis-Pierre Arguin

**Time and Location:** F 2pm-4pm, Room TBD

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**Office hours :** Before-After class on Friday or by appointment. Email me at anytime and I will get back to you asap.

**Prerequisites:** The prequel Probability I MATH 83100, Functions of one real variable MATH 70100 and MATH 70200.

**Students that took MATH 70100 and MATH 70200 but not MATH 83100 are strongly encouraged to register.**

1. COURSE DESCRIPTION

The course is designed as a first course in stochastic processes (with an emphasis on Brownian motion) and its connections to analysis and PDE's. In a nutshell, the point is to study measures on spaces of functions. The concepts of Probability I MATH 83100 needed for this course will be presented when needed.

In particular, students with a strong background and interest in real analysis but that did not take Probability I, are welcome to join.

2. EVALUATION

There will be weekly problem sets during the semester. The final grade will be based on participation.

3. TENTATIVE CONTENT

- Review of basic concepts: Convergence theorems and Limit Theorems,  $L^p$  spaces
- Gaussian Processes and Brownian motion
- Martingales
- Stochastic Integration
- Stochastic Calculus and Relations to PDE's (Ito's formula, Feynman-Kac formula)
- Markov Processes

**Have a great semester !**