ORIE 6510 - Probability
Spring 2014, 4 credits

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Lectures: Tue and Thu 10:10 - 11:25 am in Phillips Hall 213

Recitations: Mon 2:55 - 4:25pm in Upson Hall 109

Office hours:

Andreea Minca: Monday 10:30 a.m. - 12 p.m in RHD 222. Email: acm299@cornell.edu or by appointment.

Website: The course website is available through http://blackboard.cornell.edu/.

Contents:

Part I. Measure Theory.

- Measured spaces (Sigma-algebras, measurable functions, Monotone Class Theorem)

- Integration with respect to a measure (Integrable functions, Fatou's Lemma, Dominated Convergence Theorem)

- Product space (Fubini's Theorem)

Part II. Probability.

- Foundations of probability theory (Review of important distributions, Moments of a distribution, Characteristic function)

- Independence (Independent events, Independent sigma-algebras, Independent random variables, Borel-Cantelli lemma)

- Convergence of random variables (Almost sure convergence, convergence in probability, in L^p, Strong Law of Large Numbers, weak convergence, Central Limit Theorem)

- Conditional Expectation

- Martingales (if time permits)

Prerequisites: Real analysis at level of MATH 4130; one-semester calculus-based probability course

Literature:

- P. Billingsley. Probability and Measure, 3rd ed. Wiley, 1995.

- R. Durett. Probability: Theory and Examples, Lecture notes, January 29, 2010

Assignments: Weekly assignment sheets will be posted on the course homepage at `http://www.blackboard.cornell.edu/`. Homeworks should be left in the drop box of the course or handed to the instructor.
Grading: The final grade will be based on homework assignments (60%) and an in-class final exam (40%)

If there is a dispute about grading (a homework set or an exam), you may turn in the work with a written request for a regrade within a week of the work being returned. **All** *of the work, and not just the disputed question, will be regraded.*

Academic Conduct: Each student in this course is expected to abide by the Cornell University Code of Academic Integrity.