

UNIVERSITY OF CALIFORNIA, SANTA BARBARA
Department of Statistics and Applied Probability
PSTAT 210, Measure Theory for Probability, Fall 2008
Syllabus

Instructor: Dr. János Engländer
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Preliminary office hours:
Tuesday 11-12
Thursday 11-12

Goal of the course: To give a firm and rigorous background in measure theory that enables the student to learn probability theory and its applications at an advanced level.

Course content:

- Mathematical preliminaries (supremum, infimum, liminf and limsup; operations with sets).
- σ -fields, Borel sets.
- Probability spaces, constructions, extensions, Lebesgue measure.
- Measurability, random variables, generated σ -fields.
- Independence, Zero-One Laws, Borel-Cantelli Lemma.
- Integration and expectation, Riemann vs. Lebesgue integral, Product spaces, Fubini Theorem.

Textbook:

- *A Probability Path* by S. Resnick, Springer Verlag (1998). Chapters I-V.

Further literature:

- *An Introduction to Measure and Probability* by J. C. Taylor, Springer Verlag (1996)
- *Probability and Measure*, (3rd Edition) by P. Billingsley, Wiley-Interscience (1995).

Prerequisites: Basic calculus and an open mind.

Homeworks: Homeworks will be given regularly. You will have to submit them in time. However you may have the opportunity to make corrections.

Office hours: Please come to office hours to ask questions and provide feedback on the class.

Course grades: will be based on homework.

Enjoy the course!