

LTCC Basic Course

Title: Measure Theory

Basic Details:

- Core Audience : 1st year, all areas
- Course Format: **Extended**: 5 x 2hr lectures

Course Description:

- Keywords: measures and measurability, Lebesgue, functions, integration, sigma algebras
- Syllabus: We cover the basic structure of measures, starting with the algebra of sets on which a measure is defined. We explore the concept of outer measure and its most common application, the Lebesgue measure on Euclidean space. Next we see how measure is applied to functions and their integration, including the monotone and dominated convergence theorems. We end the course with the Radon-Nikodym Theorem, the cornerstone of conditional expectation and probability.
- Recommended reading: Donald L. Cohn, Measure Theory
- Additional Optional reading: Terrence Tao, An Introduction to Measure Theory; Paul Halmos, Measure Theory; M.E. Munroe, Introduction to Measure and Integration
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- Prerequisites: none

Format:

- Four discussion/problem sheets
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- Electronic lecture notes, but the lectures will follow the Cohn book
- 10 hours of lectures

Lecturer Details:

- Lecturer: Robert Samuel Simon
- Lecturer home institution: LSE
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