

# Probability Theory II

PhD in Statistics & Computer Science

Bocconi University

**Instructor:** Antonio Lijoi

## Course Description.

The course will cover some fundamental topics in Probability Theory, including conditional expectations and probabilities, weak convergence, characteristic functions and central limit theorems.

## Course Syllabus

- Convergence of distributions.
- Characteristic functions, inversion formulae, Lévy's continuity theorem
- Central limit theorems: independent and identically distributed summands, the Lindeberg and Lyapunov theorems
- Infinitely divisible distributions
- Conditional expectation, regular conditional probabilities, conditional independence

## Textbooks

P. Billingsley (1995). *Probability and Measure*. 3rd Ed. Wiley, New York.

R. Dudley (2002). *Real Analysis and Probability*. Cambridge University Press.

## Exam

Written and oral exam