

A Second Course in Probability

The 2006 INFORMS Expository Writing Award-winning and best-selling author Sheldon Ross (University of Southern California) teams up with Erol Peköz (Boston University) to bring you **A Second Course in Probability**. This textbook is for undergraduate and graduate students in statistics, mathematics, engineering, finance, and actuarial science, and is a guided tour designed to give familiarity with advanced topics in probability without having to wade through the exhaustive coverage of the classic advanced probability theory books. Topics covered here include measure theory, limit theorems, bounding probabilities and expectations, coupling and Stein's method, martingales, Markov chains, renewal theory, and Brownian motion.

No other text covers all these advanced topics rigorously but at such an accessible level; all you need to get started here is calculus and material from a first undergraduate course in probability. Any other concepts required, such as the definition of convergence, the Lebesgue integral, and of countable and uncountable sets, are introduced as needed.

Measure theory is gently introduced with a novel example of a non-measurable set, the law of large numbers is proved using the ergodic theorem in the first chapter, and proofs of the central limit theorem are given using Stein's method and Brownian motion embeddings. The coverage also focuses on applications in applied probability, where a number of recent results from the literature are given.

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