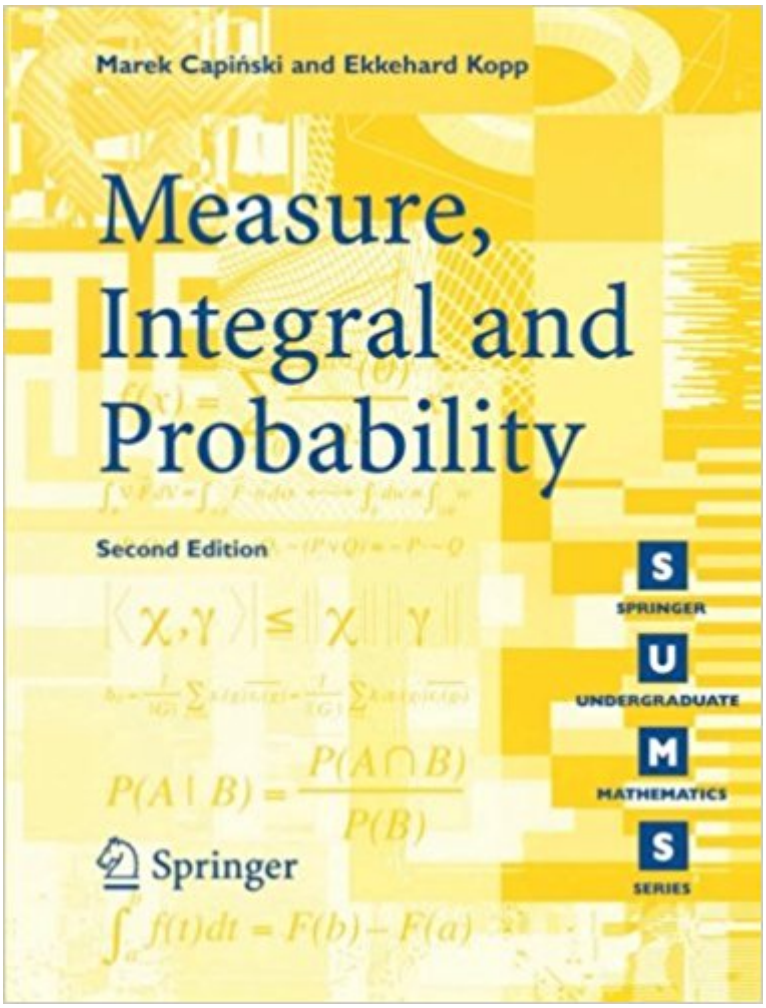
Measure, Integral And Probability



Synopsis

Measure, Integral and Probability is a gentle introduction that makes measure and integration theory accessible to the average third-year undergraduate student. The ideas are developed at an easy pace in a form that is suitable for self-study, with an emphasis on clear explanations and concrete examples rather than abstract theory. For this second edition, the text has been thoroughly revised and expanded. New features include: Â a substantial new chapter, featuring a constructive proof of the Radon-Nikodym theorem, an analysis of the structure of Lebesgue-Stieltjes measures, the Hahn-Jordan decomposition, and a brief introduction to martingales Â key aspects of financial modelling, including the Black-Scholes formula, discussed briefly from a measure-theoretical perspective to help the reader understand the underlying mathematical framework. In addition, further exercises and examples are provided to encourage the reader to become directly involved with the material.

Book Information

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Customer Reviews

From the reviews: The level of explanation is excellent and great care has gone into providing motivation for the study of all aspects of the materialâ |Overall, this is an excellent and interesting text. Times Higher Education SupplementA clear, understandable treatment of a very problematic areaâ |The authors are to be commended for their lucid writing style.Journal of the American Statistical Association From the reviews of the second edition: "This book is a gentle introduction that makes measure and integration theory accessible to the average third-year undergraduate

student. The ideas are developed at an easy pace in a form that is suitable for self-study, with an emphasis on clear explanations and concrete examples rather than abstract theory. â | Key aspects of financial modelling, including the Black-Scholes formula â | help the reader understand the underlying mathematical framework." (L'Enseignement Mathematique, Vol. 50 (3-4), 2004) "The central concepts of this excellent undergraduate text are those of Lebesgue measure and the Lebesgue integral, especially with a view to their applications in probability and, more briefly, finance. â | Throughout, the material is presented clearly and rigorously, with an emphasis on accessibility and explicitness. â | the book engages the reader actively, and the applications in both probability and finance are clearly developed from a measure-theoretic perspective." (Jennie Golding, The Mathematical Gazette, Vol. 90 (518), 2006) "There exist many books on each of the areas of real analysis and probability, including some which attempt to treat both subjects in the same treatise. â | A fundamental strong point of the book under review is that the reader is led through a careful course â | . For the second edition, the text has been thoroughly revised and expanded. â | The selection and presentation of the material makes this a useful book for an introduction to measure, integration theory and probability." (B. Kirstein, Zeitschrift fÃ r Analysis und ihre Anwendungen, Vol. 24 (4), 2005) "This text succeeds in its aim of providing an introduction to measure and integration that is â | accessible to undergraduates. Written in a clear engaging style, the text is seasoned with an abundance of concrete examples. â | Each chapter concludes with a substantial section on probability and a brief section on finance. â | a broad introduction to probability has been presented, extending to martingales, the strong law of large numbers, and the Lindeberg-Feller version of the central limit theorem." (J. W. Hagood, Zentralblatt MATH, Vol. 1103 (5), 2007)

Book is terribly rewritten

The books provides a good introduction. However this should not be your primary book for the subject matter. It is an awesome book to get your feet wet a little. After the first 3 chapters, I suggest looking at books that are more specialized. If you have access to a University library, then there are many books on this that does much better job on introduction. For others, this could be the next best alternative.

This book is, as it were, manna from heaven for the aspiring financial mathematician, especially someone without a first degree in mathematics or a mathematically-based subject. The only

prerequisites are a very good understanding of set-theory and some knowledge of the theory of continuous functions (at the level of a first course in real analysis, e.g. Apostol's Mathematical Analysis). The development is patient and there is sufficient help for the beginner (full solutions at the back, and, for practice, unproved propositions in the text with proofs at chapter-ends). The coverage is not overwhelming and anyone with the requisite preparation can digest the book in a term's work. Measure theory on its own is an incredibly dry subject. The authors do a great job of covering the essentials in about 300 pages, while making the subject interesting and applicable at the same time. A very attractive feature of the book is its brief focus on mathematical-finance applications. Most chapters end with a small section on such applications which is very useful for someone simultaneously studying mathematical finance. Particularly, it shows how to conceptualize financial models measure-theoretically. A very useful little volume indeed!

Highly accessible and clear intro to measure and Lebesgue integration. Can relax with this book while waiting for the train after work. Only minor negatives are: (1) not enough exercises and (2) there are typos but Springer Verlag doesn't provide any errata list whatsoever.(Update 2008) There are now other similar books on the market and the paucity of exercises in this book is just not acceptable. For an inexpensive alternative, I recommend Klambauer's "Real Analysis" published by Dover. He uses CarathÃ©odory's definition of a measurable set which (to me) is a faster path to results. Also his exercises are insightful.

Measure theory is often introduced axiomatically on abstract sets. Given the sample space X one must find a sigma-field of subsets of X (the events) and a measure P that fulfill the axioms of probability and only when these are found (i.e. proven consistent with the axioms) one can start using them. This method, altough powerful, is probably not the best for helping new entrants understand the material and motivating students sufficiently.This is why this book is so great! Capinski and Kopp do a remarkable job in providing great motivation for the axioms of probability by presenting probability defined on the real line. Given a subset of the samplespace X, the outer measure of the set becomes the natural measure when X = the reals (or a subset of it) and it is easy to understand why events must be sigma-fields (countable additivity of the probability measure cannot be guaranteed otherwise).This is a great introduction to measure based probability theory that requires only some background in real analysis with an introduction to measure theory (for instance Pugh - Real Mathematical Analysis), however after reading this book one should probably continue with a more traditional book such as Ash, Chung or Billingsley.

This is a very interesting book. I hope to read the entire book in the future. If you haven’t covered the basics for a graduate level course in measure theory, this is a wonderful alternative to begin learning advanced probability.

This text is a leisurely development of the major concepts in measure of probability theory. There are many useful examples that are sprinkled throughout the text that motivate the discussion. The solutions to the problems are also provided. This book is suitable for advanced undergraduate. Although I don’t have any major complaints about the book, there already exists a much better book with many more exercises, diagrams, and much more thorough development and extension of the principal concepts. That book is Jones’ "Lebesgue integration on Euclidean space", which I cannot recommend highly enough.

Nice intro to measure, integral, and probability. Self contained. Attractively priced.