

## Preface to the Second Edition.

I am pleased to have the opportunity to publish a second edition of this book. The book's basic structure and content are unchanged; in particular, the emphasis on establishing probability theory's rigorous mathematical foundations, while minimising technicalities as much as possible, remains paramount. However, having taught from this book for several years, I have made considerable revisions and improvements. For example:

- Many small additional topics have been added, and existing topics expanded. As a result, the second edition is over forty pages longer than the first.
- Many new exercises have been added, and some of the existing exercises have been improved or "cleaned up". There are now about 275 exercises in total (as compared with 150 in the first edition), ranging in difficulty from quite easy to fairly challenging, many with hints provided.
- Further details and explanations have been added in steps of proofs which previously caused confusion.
- Several of the longer proofs are now broken up into a number of lemmas, to more easily keep track of the different steps involved, and to allow for the possibility of skipping the most technical bits while retaining the proof's overall structure.
- A few proofs, which are required for mathematical completeness but which require advanced mathematics background and/or add little understanding, are now marked as "optional".
- Various interesting, but technical and inessential, results are presented as remarks or footnotes, to add information and context without interrupting the text's flow.
- The Extension Theorem now allows the original set function to be defined on a semialgebra rather than an algebra, thus simplifying its application and increasing understanding.
- Many minor edits and rewrites were made throughout the book to improve the clarity, accuracy, and readability.

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