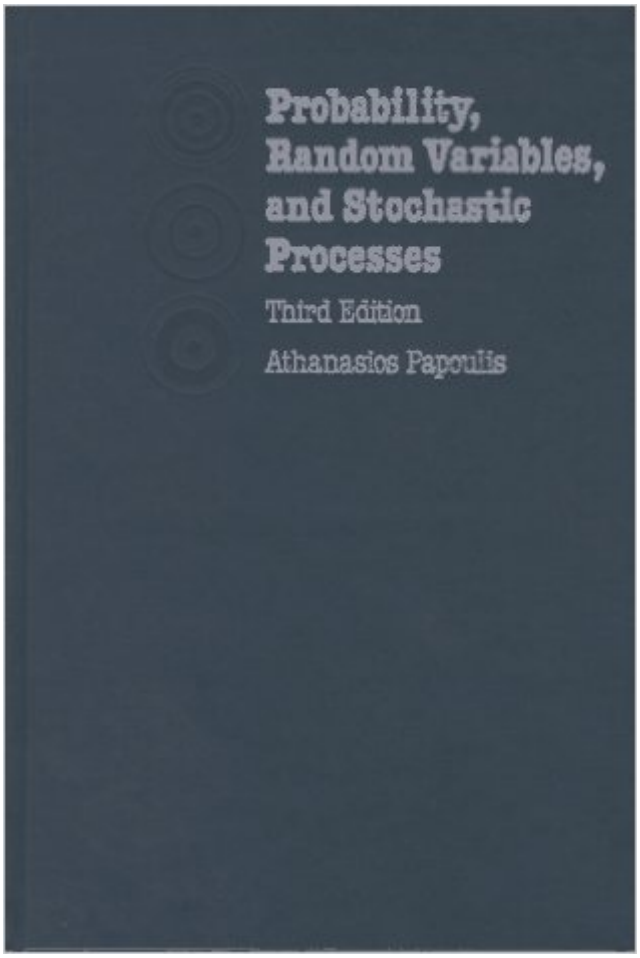
Probability, Random Variables And Stochastic Processes



Synopsis

Designed for graduate-level courses, this text has defined the course of study in probability theory, highly regarded for its strong mathematical orientation and comprehensive coverage. The book classifies topics in probability, random variables, and stochastic processes very logically, carefully incorporating a wide range of illustrations and applications. This edition contains a substantial revision of Parts II & III with greater emphasis on realistic methods of spectral estimation and analysis, and many new problems, examples and applications.

Book Information

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Customer Reviews

When readers and students ask to me for a useable book for nonmathematicians to get into probability (or a probabilistic approach to statistics), before embarking into deeper problems, I suggest this book by the Late A. Papoulis. I even recommend it to mathematicians as their training often tends to make them spend too much time on limit theorems and very little on the actual "plumbing".The treatment has no measure theory, cuts to the chase, and can be used as a desk reference. If you want measure theory, go spend some time reading Billingsley. A deep understanding of measure theory is not necessary for scientific and engineering applications; it is not necessary for those who do not want to work on theorems and technical proofs.I’ve notice a few complaints in the comments section by people who felt frustrated by the treatment: do not pay attention to them. Ignore them. It the subject itself that is difficult, not this book. The book, in fact, is

admirable and comprehensive given the current state of the art.I am using this book as a benchmark while writing my own, but more advanced, textbook (on errors in use of statistical models). Anything derived and presented in Papoulis, I can skip. And when students ask me what they need as pre-requisite to attend my class or read my book, my answer is: Papoulis if you are a scientist, Varadhan if you are more abstract.

After reading almost all reviews, I actually think I agree with almost all including the ones that say it is not a book for beginners and ones that say that it is a great book written by a very knowledgeable author. As a student who just completed a course in this subject with this book as the text, here is what I would like to say:1. My instructor re-ordered some of the content of the text for his course. It seemed necessary to understand certain concepts.2. As one of the previous reviews mentioned, some of the important aspects of probability theory were hidden in problems, these were brought out by the instructor either as homeworks or as part of lecture notes and explained. This also means that it is not enough to just read this text and understand the examples. It is almost as important to go through the problems to get the complete picture3. All in all I liked the book but I sure would not have liked it as much if I did not have a good instructor to go with it. Definitely not a self-study book.

i would like to again point out that while this book is excellent as a reference, it’s not very good to read cover-to-cover. Papoulis is extremely knowledgeable in this area, and this book is, in fact, the FIRST EVER book of stochastic/random variables and processes written for the engineers. unfortunately, despite the excellent material, the presentation and coverage is sometimes hard to follow, and hides the true gem in this book.

I first encountered the works of Papoulis when just out of graduate school in pure math, and worked for a major defense contractor as an analyst. I found out that almost all the engineers there had this book, and purchased a copy. I had studied stochastic processes at a much more theoretical level than is presented in this book, and that study was significantly more difficult than the material in the text under review, so complainers take note. Why do I think this book an excellent one? Because it is so eminently USEFUL to the working engineer. I believe that has been the intent of the author in all of his works. If you’re a working engineer who needs to find answers to tough problems, you can scarcely do better than to consult Papoulis.For example, the material on power spectra is of more than academic interest and is useful in applications; the bivariate Taylor expansion for moments of a function of two distributions has been used again and again in applications in industry; especially in

the analysis of the ratio of noisy variables arising from radar measurements. The point is that the text provides the material in a readily accessible way for someone who needs it in the "real world" of engineering analysis.

I cut my teeth from the 2nd edition of this classic text and later actually went out and bought the 1st edition (1965)because multiple people that I work with mentioned that later editions were watered down compared to the original edition.I think a more accurate statement is that more applications chapters were added in latereditions (entropy, queuing theory, etc..) and the first edition is geared more toward laying out the basic underlying theory.In any case, any engineer or student working in Kalman filtering or communications would be well served byhaving a copy of this book at his/her reach. In my opinion there is never any one best book on any topic but thisbook is an element of the spanning set of books that should be consulted by engineering students/professionals on this difficult topic. Other classic books that I wouldrecommend along with Papoulis are1. Probability and Stochastic Processes for Engineers by Helstrom (written by one of the fathers of modern detection theory)2. An Introduction to Probability and Stochastic Processes by Melsa and Sage (Dover has recently reprinted this classic)Although I am not a big fan of newer textbooks the following books are the best of the more recent texts1. Ibe, "Fundamentals of Applied Probability and Random Processes" (this book is very straightforward and written for the average student; good place to start for the novice)2. Kay, "Intuitive Probability and Random Processes using MATLAB" (excellent book; best of all modern texts)3. Dolecek, Random Signals and Processes Primer with MATALB (really brings the subject to life...best used as supplementary reading)4. Jacobs, "Stochastic Processes for Physicists" (learn the Ito calculus painlessly... Book is also a good intro for engineers despite the title)

(Probability and Its Applications) Random House Webster's Word Menu (Random House Newer Words Faster) Stochastic Processes in Physics and Chemistry, Third Edition (North-Holland Personal Library) Stochastic Processes (Cambridge Series in Statistical and Probabilistic Mathematics) An Introduction to Stochastic Processes with Biology Applications Stochastic Processes How to Gamble If You Must: Inequalities for Stochastic Processes (Dover Books on Mathematics) Introduction to Stochastic Processes with R Stochastic Processes: Theory for Applications Introduction to Stochastic Processes (Dover Books on Mathematics) An Introduction to Stochastic Processes with Applications to Biology, Second Edition Advanced Mathematics for Engineers with Applications in Stochastic Processes. Aliakbar Montazer Haghighi, Jian-Ao Lian, Dimitar P. Mishev (Mathematics Research Developments) Stochastic Processes: An Introduction, Second Edition (Chapman & Hall/CRC Texts in Statistical Science)