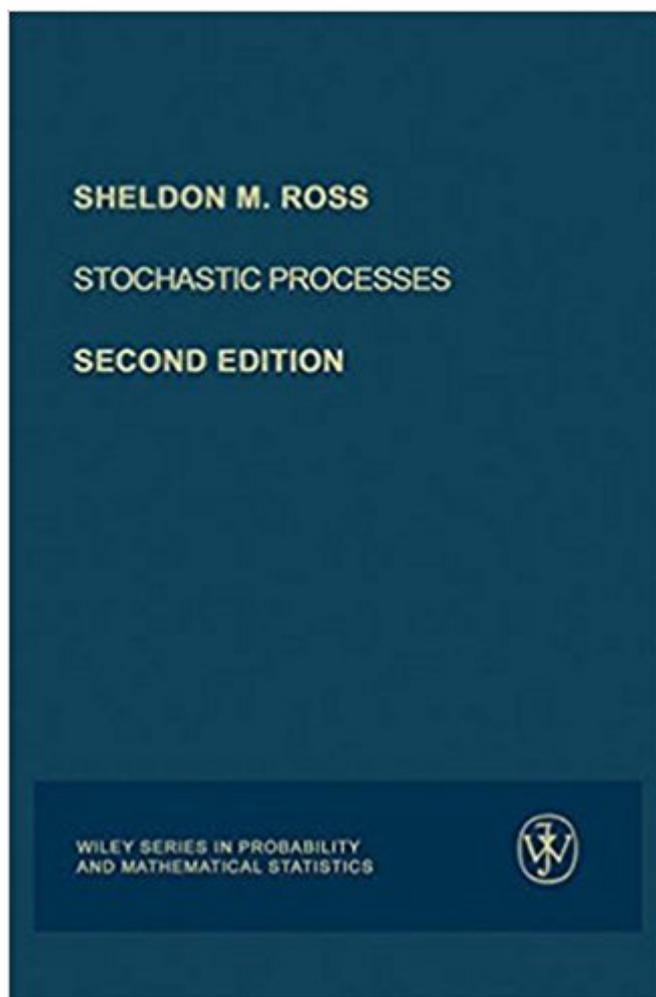


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# Stochastic Processes



## Synopsis

A nonmeasure theoretic introduction to stochastic processes. Considers its diverse range of applications and provides readers with probabilistic intuition and insight in thinking about problems. This revised edition contains additional material on compound Poisson random variables including an identity which can be used to efficiently compute moments; a new chapter on Poisson approximations; and coverage of the mean time spent in transient states as well as examples relating to the Gibb's sampler, the Metropolis algorithm and mean cover time in star graphs. Numerous exercises and problems have been added throughout the text.

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## Customer Reviews

I have found this book to be a fantastic resource for practitioners (including myself and colleagues) who need to find known results and/or develop new ones by applying clear probabilistic (especially, sample-path) thinking to new problems. To learn the material and frameworks for the first time, it is perhaps still impossible to beat Feller. (Grimmett and Stirzaker is a great introduction in the same tradition and friendlier than Ross.) But once one has been out in the real world doing applied stochastic modeling for a while, this book of Ross's becomes extremely valuable! It has many results in it that are difficult or impossible to find elsewhere and that are pretty easy to locate here. Moreover, the proofs are explained very clearly, though briefly, so that if it has been a while since you have had to do problems sets, the style of thinking will come back in a hurry on reading Ross's exposition. Finally, in contrast to some other good books (like Hoel et al.), Ross's notation tends to

be very clear and intuitive -- very close to what many authors choose in their journal articles -- so that one can immediately follow a particular result and exposition without having to read through a lot of the rest of the book to understand the notation. This is a real benefit for folks who just want to find and use what is known to help solve some new problems. In summary, I agree with others that this may not be the right book to learn stochastic processes from for the first time, but it is well worth the (huge) price when you need an up-to-date, clearly explained source to help you solve real-world problems.

I was surprised to see this book getting negative reviews, as it's one of my very favorite textbooks in this area, and I found it an absolute joy to study from when I took probability my first year of grad school. The writing and notational style are indeed concise. However, I appreciated that there wasn't a lot of "filler" text. Instead, the intuition comes by working through the proofs and examples yourself, and Ross has a knack for giving the intuitive rather than the clever or short proof. In that sense this book is quite pedagogical, though not wordy. I didn't have a very strong math background when I first read this book, and in fact I think I learned a lot about how to DO proofs by reading it carefully. I have not read "Probability Models" by the same author, but I know it has been used as the text for advanced undergraduate courses in my department. I certainly didn't feel the need to refer to it as I read this book. If you are in doubt, try using the "Search Inside the Book" option to get a feel for the level of mathematical detail. I've recommended this book to several friends taking masters level probability, and I think it's well worth the price for the right audience.

This book is at a slightly higher level than "Probability Models" by the same author but is not self-contained, and even if you have a fairly good level of Maths and Stats you will probably need both books to grasp the concepts adequately. Its cost is outrageous, yet it shows again Ross's strengths: good examples and a mix of medium-level and some difficult problems worth trying. The only problem is if you buy both books you will spend a nice sum for having 80% of the information repeated...

I found the exercises quite challenging and some, once you've solved for the solution, were very intuitive. Some were difficult (I spent 2-3 days to think about each of them), some were quite straightforward (less than 1 hour for each). If you want to learn stuff from this book, you got to solve the problems! Mind you, I believe if you want to learn mathematics, you need to solve problems. Besides the exercises, I don't think this book can live up for the cost. This book was used

in a course I took. I thought about buying it for a week, but I finally didn't. Instead, I went to the library and solved the exercises. There are better references out there at this level (Hoel&Port&Stone, Feller, for instance), with same or less price.

If you want to enjoy learning renewal and markov processes and other stochastic processes, this book will help you to do just that. To use this book, you need the book called Introduction to probability models by Ross also. Without it, you will never solve even a single problem from this book. The material is well organised but quite often you have to study several times to understand some concepts. Use it at advanced undergraduate or graduate level. As a beginner, forget it!. You may need a professor in applied probability to assist you in solving some problems.

I am surprised to see this book getting negative reviews, as it is my favorite book on stochastic processes. That is in part a function of my background -- I did a physics undergrad with a math minor, and this book is written like a cross between a physics and a math book. Stochastic processes are used in more and more areas, and perhaps if you come from a different background there's a better book for you. Ross doesn't hit some topics which would be useful to people in finance or economics, for example, like stochastic calculus, and his emphasis on aspects of queueing theory would probably be downplayed in a book written today. But this is an excellent book for physics or math people, and I would imagine also for anyone mathematically inclined. The explanations are detailed and lucid, but also rigorous enough to be mathematically satisfying. Ross works many examples, gives a range of good exercises, and manages to strike a balance between hitting a wide range of topics and keeping each chapter readable. It does take a fair deal of time to read, work, and understand each chapter, but that is a function of the vast scope of the topic -- and in my experience, once you work through a chapter or section, you \*know\* it, and will be able to use it in your work. This is a book for people who want to use stochastic processes in settings where you sometimes need to get "under the hood", which is what makes the interplay between solid explanations and worked examples so effective. It doesn't cover everything under the sun on the topic, which is how it stays under 600 pages, but does give you the tools to go forward. In sum, this book's status as the classic intermediate introductory text is well-deserved.

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