Stochastic Processes

By J. Medhi

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-The theoretical results developed have been presented through a large number of illustrative examples to give clarity of concept.
-Many new topics like Martingales, Simulation have been included which are of great importance in diverse applications.
-The 1st and 2nd editions of this book have earned many accolades from the international scientific fraternity.

ABOUT THE BOOK:

This book aims to position itself between the level of elementary probability texts and advanced works on stochastic processes. The pre-requisites to consult this book are a course on elementary probability theory and statistics, and a course on advanced calculus. In this book numerous examples have been given, based on theories discussed and a large number of problems along with their answers have also been provided. This revised edition further updates the materials and references and some new chapters have been introduced. The text has been designed particularly for advanced undergraduate, postgraduate and research level courses in applied mathematics, statistics, operations research, computer science, different branches of engineering, telecommunications, business and management, economics and life sciences.

CONTENTS:
-Random Variable and Stochastic Processes
-Markov Chains
-Markov Processes with Discrete State Space: Poisson Process and its Extensions
-Markov Processes with Continuous State Space
-Martingales
-Renewal Processes and Theory
-Markov Renewal and Semi-Markov Processes
-Stationary Processes and Time Series
-Branching Processes
-Applications in Stochastic Models
-Simulation
-Appendices
-Some Basic Mathematical Results
-Answers to Exercises

-Abbreviations
-Table of Laplace Transforms
-Important Probability Distribution and their Parameters: Moments, Moment Generating Functions

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-University and College Libraries
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Stochastic Processes By J. Medhi Bibliography

- Sales Rank: #4841844 in Books
- Published on: 2009-11-15
- Original language: English
- Dimensions: 9.50" h x 7.25" w x 1.00" l,
- Binding: Hardcover
- 524 pages

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Editorial Review

Review
A review of the first edition in The American Mathematical Monthly (Dec., 1982) gives a special positive emphasis on it as a textbook as this is the clear choice amongst a dozen or more competing texts. (TAV) Similarly a review of the second edition (1994) in the Journal of the Operational Research Society, U.K. (1996) commended it As before, it rightly deserves to be 'nominated' as the first choice. (Jim Freeman)

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Medhi has written a Stochastic Processes book in the classic style, just the way I like it. The chapter titles are: 1. Random Variables and Stochastic Processes, 2. Markov Chains, 3. Markov Processes With Discrete State Space: Poisson Process and Its Extensions, 4. Markov Processes With Continuous State Space, 5. Martingales, 6. Renewal Processes and Theory, 7. Markov Renewal and Semi-Markov Processes, 8. Stationary Processes and Time Series, 9. Branching Processes, 10. Applications in Stochastic Models, 11. Simulation.

Chapter 4 is mainly about Brownian motion and Chapter 10 is mainly about queueing theory. [Medhi is the author of an excellent queueing theory text as well (Medhi 2003).] Chapter 2 includes a graph-theoretic approach to Markov chains and statistical inference for Markov chains, topics not found in most other stochastic processes books. Appendix A covers some mathematical background including results on Laplace transforms, difference equations, and matrices. It is appropriate to compare the third edition to the second edition (1994). In addition to some changes in presentation, there are new chapters on martingales and simulation. The third edition also has an improved printing style and binding. In addition, the table of contents has been greatly expanded to include subsections. This is of great value in searching for a particular topic. The index has expanded as well. Although the bulk of material in the third edition is similar to the second edition, the third edition is a considerable improvement over the earlier work.

I especially like the writing style of Medhi, which is reader friendly. He goes out of his way to add clarity if a topic has potential confusion. He addresses a reader's questions even before the reader has managed to formulate those questions. It is instructive to see a master expositor in action. The exercises vary in difficulty, and include standard calculations, questions aimed to improve the understanding of the material, and other interesting topics that were not part of the general presentation in the expository sections. Some of the exercises have answers, some have partial solutions, others have neither (the latter are usually questions which ask the reader to show some relationship holds). I especially like the topics of the exercises as they make the reader think in new ways and wonder over extensions and possible modifications of the problems.

An author has to choose what to include and exclude in the choice of topics, examples, and exercises. Medhi's choice of topics is most appropriate for a stochastic processes book. The choice of examples used to illustrate the general concepts is excellent, helped by the author's years of experience. Medhi also includes

bits of history in his presentation, and has excellent bi --Myron Hlynka, University of Windsor, TECHNOMETRICS, MAY 2011, VOL. 53, NO. 2 221-222 (BOOK REVIEWS SECTION)

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The book is a masterpiece by a distinguished expert in the field. It should be in the library of every university and every student and researcher in probability, and it should be used as a text in classrooms around the world. My copy sits on my desk so that I can have ready access to it at all times. --Myron Hlynka, University of Windsor, TECHNOMETRICS, MAY 2011, VOL. 53, NO. 2 221-222 (BOOK REVIEWS SECTION)

About the Author
Jyotiprasad Medhi, Professor Emeritus, was a visiting professor at the Universities of Montreal, McMaster and Toronto (Canada), and University of Wisconsin (USA).

He is the author/co-author of a large number of scientific/technical papers published in international journals and has been working as referee to many reputed international journals. He has also been giving seminar

lectures at several Universities in India, UK, France, Canada and U.S.A.

In addition to publishing a large number of research papers and an introductory text Statistical Methods, he has authored three advanced level books Stochastic Processes, Recent Developments in Bulk Queueing Models and Stochastic Models in Queueing Theory, published in India and USA.

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This Stochastic Processes book is not ordinary book, you have after that it the world is in your hands. The benefit you receive by reading this book is usually information inside this guide incredible fresh, you will get data which is getting deeper anyone read a lot of information you will get. This Stochastic Processes without we know teach the one who reading through it become critical in considering and analyzing. Don't always be worry Stochastic Processes can bring once you are and not make your tote space or bookshelves' turn out to be full because you can have it in your lovely laptop even mobile phone. This Stochastic Processes having excellent arrangement in word as well as layout, so you will not sense uninterested in reading.

Olga Andres:

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