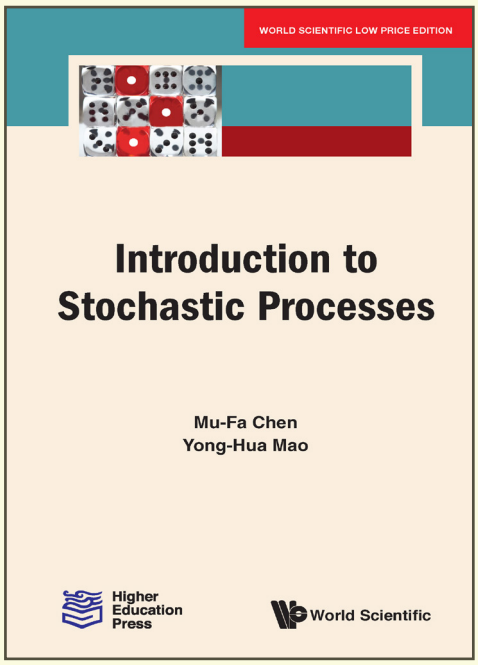
Introduction to Stochastic Processes



By **Mu-Fa Chen and Yong-Hua Mao**
(Beijing Normal University, China)

ISBN	9781944660512
Extent	244pp
Binding	Paperback
Year	2023
Price	Rs. 1395

ABOUT THE BOOK

The objective of this book is to introduce the elements of stochastic processes in a rather concise manner where we present the two most important parts — Markov chains and stochastic analysis. The readers are led directly to the core of the main topics to be treated in the context. Further details and additional materials are left to a section containing abundant exercises for further reading and studying.

In the part on Markov chains, the focus is on the ergodicity. By using the minimal nonnegative solution method, we deal with the recurrence and various types of ergodicity. This is done step by step, from finite state spaces to denumerable state spaces, and from discrete time to continuous time. The methods of proofs adopt modern techniques, such as coupling and duality methods. Some very new results are included, such as the estimate of the spectral gap. The structure and proofs in the first part are rather different from other existing textbooks on Markov chains.

In the part on stochastic analysis, we cover the martingale theory and Brownian motions, the stochastic integral and stochastic differential equations with emphasis on one dimension, and the multidimensional stochastic integral and stochastic equation based on semimartingales. We introduce three important topics here: the Feynman–Kac formula, random time transform and Girsanov transform. As an essential application of the probability theory in classical mathematics, we also deal with the famous Brunn–Minkowski inequality in convex geometry.

This book also features modern probability theory that is used in different fields, such as MCMC, or even deterministic areas: convex geometry and number theory. It provides a new and direct routine for students going through the classical Markov chains to the modern stochastic analysis.

READERSHIP

Advanced undergraduate and graduate students in stochastic processes dealing with Markov chains and stochastic analysis.

CONTENTS

Preface to the English Edition
Preface to the Chinese Edition

Markov Processes:

- Discrete-Time Markov Chains
- Continuous-Time Markov Chains
- Reversible Markov Chains
- General Markov Processes

Stochastic Analysis:

- Martingale
- Brownian Motion
- Stochastic Integral and Diffusion Processes
- Semimartingale and Stochastic Integral

Notes
Bibliography
Index

For orders and enquiries, please contact us:

FEEL Books

FEELBOOKS PVT. LTD.

DELHI	**4381/4 Ansari Road, Daryaganj, New Delhi 110002**		**Tel: +91-11-47472630**
	Pushpendra Kumar	**Mobile: +91 9015043442**	**Email: orders@feelbooks.in**
BENGALURU	**C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070**		**Tel: +91-80-26762129**
	Shekar Reddy	**Mobile: +91 9945234476**	**Email: bangalore@feelbooks.in**
MUMBAI	**Vijay Kumar**	**Mobile: +91 9871176434**	**Email: vkumar@feelbooks.in**
CHENNAI	**G Srinivasan**	**Mobile: +91 9003047502**	**Email: gsrinivasan@feelbooks.in**
KOLKATA	**Dhrubajyoti Bhattacharjee**	**Mobile: +91 9836160013**	**Email: dbhattacharjee@feelbooks.in**
HYDERABAD	**K.S.Vishwanath**	**Mobile: +91 9871745850**	**Email: kvishwanath@feelbooks.in**

***For Catalogues & title lists*: marketing@feelbooks.in**

FOLLOW US ON LinkedIn

www.feelbooks.in

FOLLOW US ON facebook

For any queries, please email us at marketing@feelbooks.in