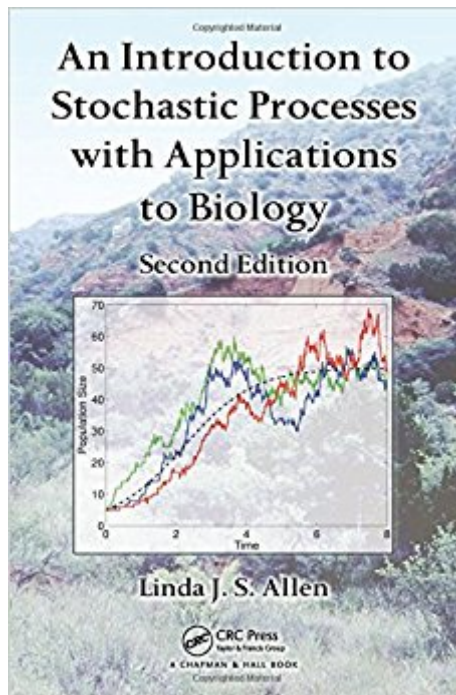# An Introduction To Stochastic Processes With Applications To Biology, Second Edition

An Introduction to
Stochastic Processes
with Applications
to Biology

Second Edition

Linda J. S. Allen

CRC Press
Taylor & Francis Group

A CHAPMAN & HALL BOOK

Synopsis

An Introduction to Stochastic Processes with Applications to Biology, Second Edition presents the basic theory of stochastic processes necessary in understanding and applying stochastic methods to biological problems in areas such as population growth and extinction, drug kinetics, two-species competition and predation, the spread of epidemics, and the genetics of inbreeding. Because of their rich structure, the text focuses on discrete and continuous time Markov chains and continuous time and state Markov processes. New to the Second Edition   A new chapter on stochastic differential equations that extends the basic theory to multivariate processes, including multivariate forward and backward Kolmogorov differential equations and the multivariate ItÃ´â ™s formula The inclusion of examples and exercises from cellular and molecular biology Double the number of exercises and MATLABÂ® programs at the end of each chapter Answers and hints to selected exercises in the appendix Additional references from the literature   This edition continues to provide an excellent introduction to the fundamental theory of stochastic processes, along with a wide range of applications from the biological sciences. To better visualize the dynamics of stochastic processes, MATLAB programs are provided in the chapter appendices.

Book Information

Hardcover: 496 pages

Publisher: Chapman and Hall/CRC; 2 edition (December 2, 2010)

Language: English

ISBN-10: 1439818827

ISBN-13: 978-1439818824

Product Dimensions: 6.1 x 1.1 x 9.2 inches

Shipping Weight: 2.1 pounds (View shipping rates and policies)

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