



4th ed. 2021, XXII, 560 p. 13 illus.

### Printed book

Hardcover

74,99 € | £64.99 | \$89.99

<sup>[1]</sup>80,24 € (D) | 82,49 € (A) | CHF

88,50

### eBook

64,19 € | £51.99 | \$69.99

<sup>[2]</sup>64,19 € (D) | 64,19 € (A) | CHF

70,50

Available from your library or

[springer.com/shop](https://www.springer.com/shop)

### MyCopy <sup>[3]</sup>

Printed eBook for just

€ | \$ 24.99

[springer.com/mycopy](https://www.springer.com/mycopy)

Vincenzo Capasso, David Bakstein

# An Introduction to Continuous-Time Stochastic Processes

Theory, Models, and Applications to Finance, Biology, and Medicine

Series: Modeling and Simulation in Science, Engineering and Technology

- Introduces readers to the theory of continuous-time stochastic processes using real-life examples in medicine, finance, and biology
- Includes updated exercises, examples, and material based on advances in recent literature
- Illustrates the ways that similar stochastic methods can be applied broadly across different fields

This textbook, now in its fourth edition, offers a rigorous and self-contained introduction to the theory of continuous-time stochastic processes, stochastic integrals, and stochastic differential equations. Expertly balancing theory and applications, it features concrete examples of modeling real-world problems from biology, medicine, finance, and insurance using stochastic methods. No previous knowledge of stochastic processes is required. Unlike other books on stochastic methods that specialize in a specific field of applications, this volume examines the ways in which similar stochastic methods can be applied across different fields. Beginning with the fundamentals of probability, the authors go on to introduce the theory of stochastic processes, the Itô Integral, and stochastic differential equations. The following chapters then explore stability, stationarity, and ergodicity. The second half of the book is dedicated to applications to a variety of fields, including finance, biology, and medicine. Some highlights of this fourth edition include a more rigorous introduction to Gaussian white noise, additional material on the stability of stochastic semigroups used in models of population dynamics and epidemic systems, and the expansion of methods of analysis of one-dimensional stochastic differential equations.

Order online at [springer.com](https://www.springer.com) / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: [customerservice@springernature.com](mailto:customerservice@springernature.com). / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: [customerservice@springernature.com](mailto:customerservice@springernature.com).

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.

