An introduction to continuous-time stochastic processes: theory, models, and applications to finance, biology, and medicine

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This book is an introduction to the theory of continuous-time stochastic processes. A balance of theory and applications, the work features concrete examples of modeling real-world problems from biology, medicine, finance, and insurance using stochastic methods. This textbook, 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, the work features concrete examples of modeling real-world problems from biology, medicine, industrial applications, finance, and insurance using stochastic methods. Key topics include: Markov processes Stochastic differential equations Arbitrage-free markets and financial derivatives Insurance risk Population dynamics, and epidemics Agent-based models.