1.	Record Nr.	UNINA9910299761203321
	Autore	Capasso Vincenzo
	Titolo	An Introduction to Continuous-Time Stochastic Processes : Theory, Models, and Applications to Finance, Biology, and Medicine / / by Vincenzo Capasso, David Bakstein
	Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Birkhäuser, , 2015
	ISBN	1-4939-2757-4
	Edizione	[3rd ed. 2015.]
	Descrizione fisica	1 online resource (XVI, 482 p. 14 illus.)
	Collana	Modeling and Simulation in Science, Engineering and Technology, , 2164-3725
	Disciplina	332
	Soggetti	Probabilities Mathematical models Social sciences - Mathematics Biomathematics Engineering mathematics Engineering - Data processing Probability Theory Mathematical Modeling and Industrial Mathematics Mathematics in Business, Economics and Finance Mathematical and Computational Biology Mathematical and Computational Engineering Applications
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Bibliographic Level Mode of Issuance: Monograph
	Nota di contenuto	Part I: Theory of Stochastic Processes -- Fundamentals of Probability -- Stochastic Processes -- The Itô Integral -- Stochastic Differential Equations -- Stability, Stationary, Ergodicity -- Part II: Applications of Stochastic Processes -- Applications to Finance and Insurance -- Applications to Biology and Medicine -- Measure and Integration -- Convergence of Probability Measures on Metric Spaces -- Appendices.
	Sommario/riassunto	This textbook, now in its third 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, the work features concrete

examples of modeling real-world problems from biology, medicine, industrial applications, finance, and insurance using stochastic methods. No previous knowledge of stochastic processes is required. Key topics include: * Markov processes * Stochastic differential equations * Arbitrage-free markets and financial derivatives * Insurance risk * Population dynamics, and epidemics * Agent-based models New to the Third Edition: * Infinitely divisible distributions * Random measures * Levy processes * Fractional Brownian motion * Ergodic theory * Karhunen-Loeve expansion * Additional applications * Additional exercises * Smoluchowski approximation of Langevin systems An Introduction to Continuous-Time Stochastic Processes, Third Edition will be of interest to a broad audience of students, pure and applied mathematicians, and researchers and practitioners in mathematical finance, biomathematics, biotechnology, and engineering. Suitable as a textbook for graduate or undergraduate courses, as well as European Masters courses (according to the two-year-long second cycle of the "Bologna Scheme"), the work may also be used for self-study or as a reference. Prerequisites include knowledge of calculus and some analysis; exposure to probability would be helpful but not required since the necessary fundamentals of measure and integration are provided. From reviews of previous editions: "The book is ... an account of fundamental concepts as they appear in relevant modern applications and literature. ... The book addresses three main groups: first, mathematicians working in a different field; second, other scientists and professionals from a business or academic background; third, graduate or advanced undergraduate students of a quantitative subject related to stochastic theory and/or applications." —Zentralblatt MATH.