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Titolo	Brownian Motion, Martingales, and Stochastic Calculus / / by Jean-François Le Gall
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Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XIII, 273 p. 5 illus., 1 illus. in color.)
Collana	Graduate Texts in Mathematics, , 2197-5612 ; ; 274
Disciplina	519.23
Soggetti	Probabilities Social sciences - Mathematics Measure theory Mathematical models System theory Control theory Probability Theory Mathematics in Business, Economics and Finance Measure and Integration Mathematical Modeling and Industrial Mathematics Systems Theory, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes Index.
Nota di contenuto	Gaussian variables and Gaussian processes -- Brownian motion -- Filtrations and martingales -- Continuous semimartingales -- Stochastic integration -- General theory of Markov processes -- Brownian motion and partial differential equations -- Stochastic differential equations -- Local times -- The monotone class lemma -- Discrete martingales -- References.
Sommario/riassunto	This book offers a rigorous and self-contained presentation of stochastic integration and stochastic calculus within the general framework of continuous semimartingales. The main tools of stochastic calculus, including Itô’s formula, the optional stopping theorem and Girsanov’s theorem, are treated in detail alongside many illustrative

examples. The book also contains an introduction to Markov processes, with applications to solutions of stochastic differential equations and to connections between Brownian motion and partial differential equations. The theory of local times of semimartingales is discussed in the last chapter. Since its invention by Itô, stochastic calculus has proven to be one of the most important techniques of modern probability theory, and has been used in the most recent theoretical advances as well as in applications to other fields such as mathematical finance. Brownian Motion, Martingales, and Stochastic Calculus provides a strong theoretical background to the reader interested in such developments. Beginning graduate or advanced undergraduate students will benefit from this detailed approach to an essential area of probability theory. The emphasis is on concise and efficient presentation, without any concession to mathematical rigor. The material has been taught by the author for several years in graduate courses at two of the most prestigious French universities. The fact that proofs are given with full details makes the book particularly suitable for self-study. The numerous exercises help the reader to get acquainted with the tools of stochastic calculus.