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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I: Measure Theoretic Probability -- Measure Integral -- Probabilities and Expectation -- Part II: Stochastic Processes -- Filtrations, Stopping Times and Stochastic Processes -- Martingales in Discrete Time -- Martingales in Continuous Time -- The Classification of Stopping Times -- The Progressive, Optional and Predicable - Algebras -- Part III: Stochastic Integration -- Processes of Finite Variation -- The Doob-Meyer Decomposition -- The Structure of Square Integrable Martingales -- Quadratic Variation and Semimartingales -- The Stochastic Integral -- Random Measures -- Part IV: Stochastic Differential Equations -- Ito's Differential Rule -- The Exponential Formula and Girsanov's Theorem -- Lipschitz Stochastic Differential Equations -- Markov Properties of SDEs -- Weak Solutions of SDEs -- Backward Stochastic Differential Equations -- Part

	V: Applications -- Control of a Single Jump -- Optimal Control of Drifts and Jump Rates -- Filtering. Part VI: Appendices.
Sommario/riassunto	Completely revised and greatly expanded, the new edition of this text takes readers who have been exposed to only basic courses in analysis through the modern general theory of random processes and stochastic integrals as used by systems theorists, electronic engineers and, more recently, those working in quantitative and mathematical finance. Building upon the original release of this title, this text will be of great interest to research mathematicians and graduate students working in those fields, as well as quants in the finance industry. New features of this edition include: End of chapter exercises; New chapters on basic measure theory and Backward SDEs; Reworked proofs, examples and explanatory material; Increased focus on motivating the mathematics; Extensive topical index. "Such a self-contained and complete exposition of stochastic calculus and applications fills an existing gap in the literature. The book can be recommended for first-year graduate studies. It will be useful for all who intend to work with stochastic calculus as well as with its applications."–Zentralblatt (from review of the First Edition).