

1. Record Nr.	UNINA9910958983203321
Autore	Oksendal Bernt
Titolo	Stochastic Differential Equations : An Introduction with Applications / / by Bernt Oksendal
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 1998
ISBN	3-662-03620-7
Edizione	[5th ed. 1998.]
Descrizione fisica	1 online resource (XIX, 324 p.)
Collana	Universitext, , 2191-6675
Classificazione	60G40 60H10 60J45
Disciplina	519.2
Soggetti	Probabilities Differential equations Mathematical physics System theory Control theory Mathematical optimization Calculus of variations Probability Theory Differential Equations Theoretical, Mathematical and Computational Physics Systems Theory, Control Calculus of Variations and Optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Introduction -- 2. Some Mathematical Preliminaries -- 3. Ito Integrals -- 4. The Ito Formula and the Martingale Representation Theorem -- 5. Stochastic Differential Equations -- 6. The Filtering Problem -- 7. Diffusions: Basic Properties -- 8. Other Topics in Diffusion Theory -- 9. Applications to Boundary Value Problems -- 10. Application to Optimal Stopping -- 11. Application to Stochastic Control -- 12. Application to Mathematical Finance -- Appendix A: Normal Random Variables -- Appendix B: Conditional Expectation --

Appendix C: Uniform Integrability and Martingale Convergence --
Appendix D: An Approximation Result -- Solutions and Additional
Hints to Some of the Exercises -- References -- List of Frequently Used
Notation and Symbols.

Sommario/riassunto

The main new feature of the fifth edition is the addition of a new chapter, Chapter 12, on applications to mathematical finance. I found it natural to include this material as another major application of stochastic analysis, in view of the amazing development in this field during the last 10-20 years. Moreover, the close contact between the theoretical achievements and the applications in this area is striking. For example, today very few firms (if any) trade with options without consulting the Black & Scholes formula! The first 11 chapters of the book are not much changed from the previous edition, but I have continued my efforts to improve the presentation throughout and correct errors and misprints. Some new exercises have been added. Moreover, to facilitate the use of the book each chapter has been divided into subsections. If one doesn't want (or doesn't have time) to cover all the chapters, then one can compose a course by choosing subsections from the chapters. The chart below indicates what material depends on which sections. Chapter 6 Chapter 10 Chapter 12 For example, to cover the first two sections of the new chapter 12 it is recommended that one (at least) covers Chapters 1-5, Chapter 7 and Section 8.6. VIII Chapter 10, and hence Section 9.1, are necessary additional background for Section 12.3, in particular for the subsection on American options.
