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Titolo	Mathematical models in the biosciences I // Michael Frame
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ISBN	0-300-25842-9
Descrizione fisica	1 online resource (xxii, 519 pages) : \$b illustrations
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Soggetti	Life sciences - Mathematical models Instructional and educational works. Materiel d'education et de formation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- Ways to use this book -- Review -- Discrete dynamics -- Differential equations models -- Single-variable differential equations -- Definite integrals and improper integrals -- Power laws -- Differential equations in the plane -- Linear systems and stability -- Nonlinear systems and stability -- Infinite series and power series -- Some probability -- Why this matters -- Appendix A. Technical -- Appendix B. Some Mathematica code -- Appendix C. Some useful integrals and hints.
Sommario/riassunto	An award-winning professor's introduction to essential concepts of calculus and mathematical modeling for students in the biosciences This book introduces mathematical modeling to bioscience students, with first semester calculus as the only prerequisite. It is the first of a two-part series exploring essential concepts of calculus in the context of biological systems. Michael Frame covers the essential ideas and theories of basic calculus while providing examples of how they relate and are applicable to subjects such as chemotherapy and tumor growth, chemical diffusion, allometric scaling, predator-prey relations, nerve impulses, and more. He presents Pearl's causality calculus to resolve Simpson's paradox, simple cardiac dynamics models, basic epidemiological models including Ronald Ross's study of malaria and its epidemic curves, and limit cycles for the glycolysis model. Based on

the author's calculus class at Yale, the book makes concepts of calculus less abstract and more relatable for science majors and premedical students.
