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Titolo	Chemical Kinetics, Stochastic Processes, and Irreversible Thermodynamics / / by Moisés Santillán
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ISBN	3-319-06689-7
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (139 p.)
Collana	Lecture Notes on Mathematical Modelling in the Life Sciences, , 2193-4789
Disciplina	543.015195
Soggetti	Biomathematics Probabilities Chemometrics Mathematical and Computational Biology Probability Theory and Stochastic Processes Math. Applications in Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Brief Introduction to Chemical Kinetics -- Brief Introduction to Thermodynamics -- Different Approaches to Analyzing a Simple Chemical Reaction -- Molecule Synthesis and Degradation -- Enzymatic Reactions -- Receltor-Ligand Interaction -- Cooperativity -- Gene Expression and Regulation -- Ion Channel Dynamics and Ion Transport Across Memberanes -- References -- Index.
Sommario/riassunto	This book brings theories in nonlinear dynamics, stochastic processes, irreversible thermodynamics, physical chemistry, and biochemistry together in an introductory but formal and comprehensive manner. Coupled with examples, the theories are developed stepwise, starting with the simplest concepts and building upon them into a more general framework. Furthermore, each new mathematical derivation is immediately applied to one or more biological systems. The last chapters focus on applying mathematical and physical techniques to study systems such as: gene regulatory networks and ion channels. The target audience of this book are mainly final year undergraduate and

graduate students with a solid mathematical background (physicists, mathematicians, and engineers), as well as with basic notions of biochemistry and cellular biology. This book can also be useful to students with a biological background who are interested in mathematical modeling, and have a working knowledge of calculus, differential equations, and a basic understanding of probability theory.