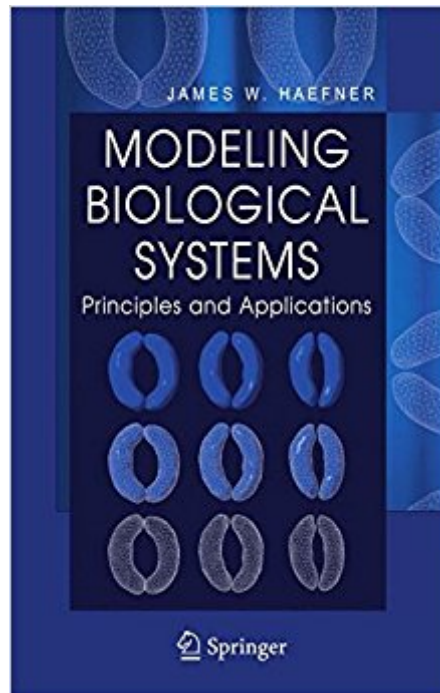


The book was found

Modeling Biological Systems:: Principles And Applications



Synopsis

I Principles	1
1 Models of Systems	3
1.1 Systems, Models, and Modeling	3
1.2 Uses of Scientific Models	4
1.3 Example: Island Biogeography	6
1.4 Classifications of Models	10
1.5 Constraints on Model Structure	12
1.6 Some Terminology	12
1.7 Misuses of Models: The Dark Side	13
Exercises	15
2 The Modeling Process	17
2.1 Models Are Problems	17
2.2 Two Alternative Approaches	18
2.3 An Example: Population Doubling Time	24
2.4 Model Objectives	28
2.5 Exercises	30
3 Qualitative Model Formulation	32
3.1 How to Eat an Elephant	32
3.2 Forrester Diagrams	33
3.3 Examples	36
3.4 Errors in Forrester Diagrams	44
3.5 Advantages and Disadvantages of Forrester Diagrams	44
3.6 Principles of Qualitative Formulation	45
3.7 Model Simplification	47
3.8 Other Modeling Problems	49
3.9 Exercises	53
4 Quantitative Model Formulation: I	53
4.1 From Qualitative to Quantitative	53
4.2 Finite Difference Equations and Differential Equations	54
4.3 Biological Feedback in Quantitative Models	54
4.4 Example Model	54
4.5 Exercises	54
5 Quantitative Model Formulation: II	81
5.1 Physical Processes	81
5.2 Using the Toolbox of Biological Processes	89
5.3 Useful Functions	96
5.4 Examples	102
5.5 Exercises	104
6 Numerical Techniques	107
6.1 Mistakes Computers Make	107
6.2 Numerical Integration	110
6.3 Numerical Instability and Stiff Equations	115

Book Information

Hardcover: 475 pages

Publisher: Springer; 2nd edition (May 6, 2005)

Language: English

ISBN-10: 0387250115

ISBN-13: 978-0387250113

Product Dimensions: 6.1 x 1.1 x 9.2 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 4.2 out of 5 stars Â Â See all reviews Â (5 customer reviews)

Best Sellers Rank: #566,895 in Books (See Top 100 in Books) #20 in Â Books > Science & Math > Mathematics > Applied > Biomathematics #130 in Â Books > Computers & Technology > Computer Science > Bioinformatics #200 in Â Books > Computers & Technology > History & Culture > History

Customer Reviews

Exactly as described.

This book is a complete dissapointment.It does not offer any real scientific physical models which then can be transformed in an algorithm and being simulated but is is merely a conglomerate of several statistical procedures commonly used in Biology for interpreting data (maybe copied by the author and collected from other books, as nothing that he presents is new!). This book does not offer any scientific, fundamental insight in how to really model and simulate properly complex biological systems, it is also written in a very unscientific, popular style. The mathematical level corresponds to High-School and as the author says in the preface: "The process of modeling biological systems is certainly not a science, but neither is it as unconstrained as the creation of a work of pure art that is evaluated solely on its esthetic content". I think that nonsense speaks for itself. This author should rather write novels instead of cobbling something together that gets the label "scientific" on the cover.The book is not trash, the author does have collected some of the simplest "models" there are to describe collections of data in statistical terms, but this has NOTHING to do with proper scientific numerical and mathematical modeling and even less with scientific Computing in the field of biological complex systems, e.g. how to simulate membranes, proteins using Quantum Chemistry or Molecular dynamics techniques.All in all I judge this book as a complete waste of money and as completely superfluous.

This textbook, although listed in "Good" condition is like brand new and only minor highlights are visible on 2 pages.Excellent!!

This book is great, it provides a extense presentation of concepts of modelling and various examples and applications.

Very fast to get it. The package is strong enough to protect the book.

[Download to continue reading...](#)

Modeling Biological Systems:: Principles and Applications Metal Ions in Biological Systems: Volume 29: Biological Properties of Metal Alkyl Derivatives Introduction to the Numerical Modeling of Groundwater and Geothermal Systems: Fundamentals of Mass, Energy and Solute Transport in Poroelastic Rocks (Multiphysics Modeling) Geochemical Modeling of Groundwater, Vadose and Geothermal Systems (Multiphysics Modeling) Physical Chemistry: Principles and Applications in Biological Sciences (5th Edition) Biological Systematics: Principles and Applications, 2nd Edition Signaling at the Cell Surface in the Circulatory and Ventilatory Systems (Biomathematical and Biomechanical Modeling of the Circulatory and Ventilatory Systems, Vol. 3) Student Solutions Manual for Differential Equations: Computing and Modeling and Differential Equations and Boundary Value Problems: Computing and Modeling Mathematical Modeling of Collective Behavior in Socio-Economic and Life Sciences (Modeling and Simulation in Science, Engineering and Technology) Microsoft Excel 2013 Data Analysis and Business Modeling: Data Analysis and Business Modeling (Introducing) 3D Modeling For Beginners: Learn everything you need to know about 3D Modeling! The Complete Works of Herbert Spencer: The Principles of Psychology, The Principles of Philosophy, First Principles and More (6 Books With Active Table of Contents) Ergonomics: Foundational Principles, Applications, and Technologies (Ergonomics Design & Management Theory & Applications) Designing Embedded Systems with PIC Microcontrollers, Second Edition: Principles and Applications Designing Embedded Systems with PIC Microcontrollers: Principles and Applications Designing Embedded Systems with PIC Microcontrollers: Principles and Applications by Tim Wilmshurst (24-Oct-2006) Paperback Principles of Operating Systems: Design and Applications (Advanced Topics) Digital Systems: Principles and Applications (10th Edition) Hierarchical Decision Making in Stochastic Manufacturing Systems (Systems & Control: Foundations & Applications) Laser-Tissue Interactions: Fundamentals and Applications (Biological and Medical Physics, Biomedical Engineering)

[Dmca](#)