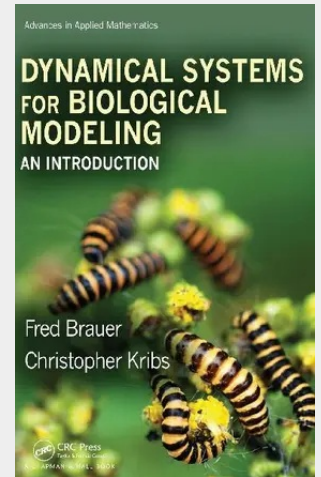


Dynamical Systems for Biological Modeling

An Introduction

Dynamical Systems for Biological Modeling: An Introduction prepares both biology and mathematics students with the understanding and techniques necessary to undertake basic modeling of biological systems. It achieves this through the development and analysis of dynamical systems. The approach emphasizes qualitative ideas rather than explicit computations. Some technical details are necessary, but a qualitative approach emphasizing ideas is essential for understanding. The modeling approach helps students focus on essentials rather than extensive mathematical details, which is helpful for students whose primary interests are in sciences other than mathematics need or want. The book discusses a variety of biological modeling topics, including population biology, epidemiology, immunology, intraspecies competition, harvesting, predator-prey systems, structured populations, and more. The authors also include examples of problems with solutions and some exercises which follow the examples quite closely. In addition, problems are included which go beyond the examples, both in mathematical analysis and in the development of mathematical models for biological problems, in order to encourage deeper understanding and an eagerness to use mathematics in learning about biology.

This book prepares both biology and mathematics students with the understanding and techniques necessary to undertake basic modeling of biological systems. Its approach emphasizes qualitative ideas rather than explicit computations and does not overwhelm students with precise technical details. The book discusses a variety of biological modeling topics, including population biology, epidemiology, immunology, intraspecies competition, harvesting, predator-prey systems, structured populations, and more. The authors also include many examples of problems with solutions and some exercises which follow the examples quite closely.



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