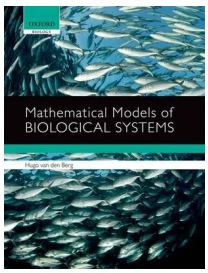
MATHEMATICAL MODELS OF BIOLOGICAL SYSTEMS



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DESCRIPTION:
Mathematical Models of Biological Systems provides a practical introduction to basic mathematical modelling methodology and analysis. It covers a variety of biological applications and uses these topics in turn to highlight key components in the art of modelling. Its primary aim is to give students the tools to translate simple, real-world biological problems into rigorous mathematical models. A secondary aim is to teach the reader how to critically assess the modelling components in the primary life science literature.

The book covers deterministic as well as stochastic dynamics, continuous-time as well as discrete-time dynamics, partial differential equations, dimensional analysis, and curve fitting/parameter estimation. It contains numerous case studies, graded from elementary examples to more complicated problems, as well as a general treatment of good modelling practice. Although the book assumes a basic background in mathematics, specifically beginning calculus and elementary statistics, all requisite material is included in a series of appendices.

Features:

- Discusses how to develop, solve, and interpret mathematical models, starting from first principles and working through increasingly complex case studies
- Incorporates a range of biologically relevant examples from fields as diverse as ecology, epidemiology, and physiology - Emphasizes the crucial importance of care and accuracy in dealing with parameters such as dimensional analysis, measurement scales, and mathematical quantities
- Based on a proven course structure

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