Topics in Mathematical Modeling
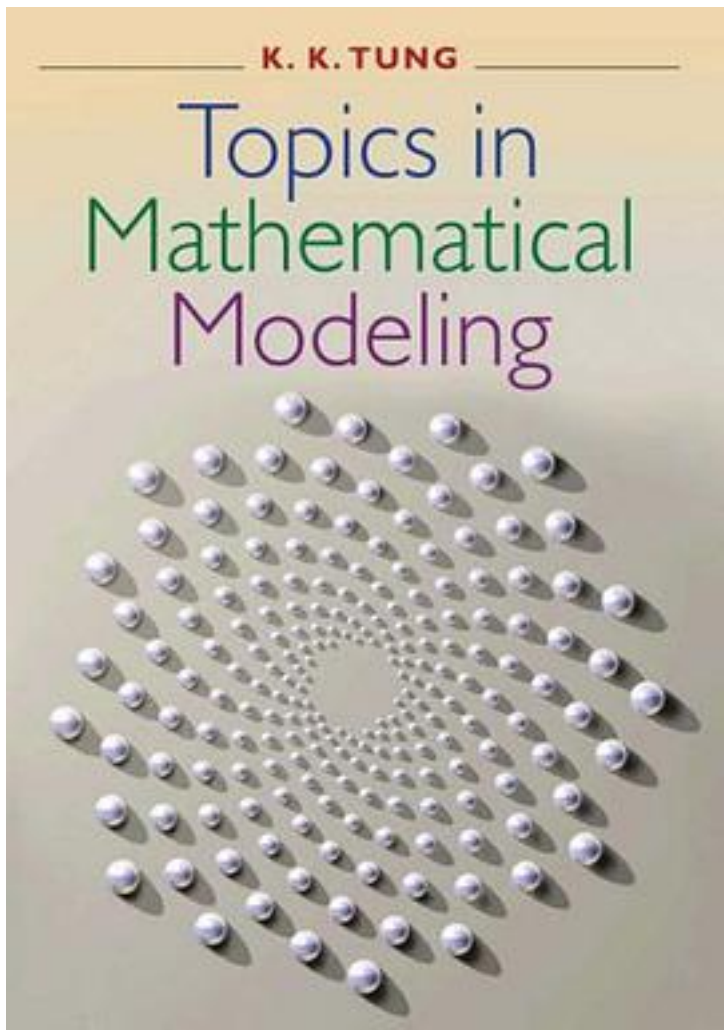
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Topics in Mathematical Modeling is an introductory textbook on mathematical

modeling. The book teaches how simple mathematics can help formulate and solve real problems of current research interest in a wide range of fields, including biology, ecology, computer science, geophysics, engineering, and the social sciences. Yet the prerequisites are minimal: calculus and elementary differential equations. Among the many topics addressed are HIV; plant phyllotaxis; global warming; the World Wide Web; plant and animal vascular networks; social networks; chaos and fractals; marriage and divorce; and El Nio. Traditional modeling topics such as predator-prey interaction, harvesting, and wars of attrition are also included. Most chapters begin with the history of a problem, follow with a demonstration of how it can be modeled using various mathematical tools, and close with a discussion of its remaining unsolved aspects. Designed for a one-semester course, the book progresses from problems that can be solved with relatively simple mathematics to ones that require more sophisticated methods. The math techniques are taught as needed to solve the problem being addressed, and each chapter is designed to be largely independent to give teachers flexibility. The book, which can be used as an overview and introduction to applied mathematics, is particularly suitable for sophomore, junior, and senior students in math, science, and engineering.

作者介绍:

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标签

数学

Math

评论

书评

此书很有特点：数学建模讲得生动，有声有色。牛顿力学不是由第二定律出发，而是从开普勒三定律讲起，导出万有引力。作者是美国华盛顿大学应用数学系董家杰（ka kit Tung）教授。多年的系主任，美国大气科学杂志主编，国际上应用数学与大气气象科学交叉领域的领军人物。关于地...

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