Mathematical Modeling with Multidisciplinary Applications

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Mathematical Modeling with Multidisciplinary Applications From Wiley

Features mathematical modeling techniques and real-world processes with applications in diverse fields

Mathematical Modeling with Multidisciplinary Applications details the interdisciplinary nature of mathematical modeling and numerical algorithms. The book combines a variety of applications from diverse fields to illustrate how the methods can be used to model physical processes, design new products, find solutions to challenging problems, and increase competitiveness in international markets.

Written by leading scholars and international experts in the field, the book presents new and emerging topics in areas including finance and economics, theoretical and applied mathematics, engineering and machine learning, physics, chemistry, ecology, and social science. In addition, the book thoroughly summarizes widely used mathematical and numerical methods in mathematical modeling and features:

- Diverse topics such as partial differential equations (PDEs), fractional calculus, inverse problems by ordinary differential equations (ODEs), semigroups, decision theory, risk analysis, Bayesian estimation, nonlinear PDEs in financial engineering, perturbation analysis, and dynamic system modeling
- Case studies and real-world applications that are widely used for current mathematical modeling courses, such as the green house effect and Stokes flow estimation
- Comprehensive coverage of a wide range of contemporary topics, such as game theory, statistical models, and analytical solutions to numerical methods
- Examples, exercises with select solutions, and detailed references to the latest literature to solidify comprehensive learning
- New techniques and applications with balanced coverage of PDEs, discrete models, statistics, fractional calculus, and more

Mathematical Modeling with Multidisciplinary Applications is an excellent book for courses on mathematical modeling and applied mathematics at the upper-undergraduate and graduate levels. The book also serves as a valuable reference

for research scientists, mathematicians, and engineers who would like to develop further insights into essential mathematical tools.

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Editorial Review

From the Back Cover

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