

ORDINARY DIFFERENTIAL EQUATIONS WITH APPLICATIONS

Third Edition

Written in a straightforward and easily accessible style, this volume is suitable as a textbook for advanced undergraduate or first-year graduate students in mathematics, physical sciences, and engineering. The aim is to provide students with a strong background in the theories of Ordinary Differential Equations, Dynamical Systems and Boundary Value Problems, including regular and singular perturbations. It is also a valuable resource for researchers.

This volume presents an abundance of examples in physical and biological sciences, and engineering to illustrate the applications of the theorems in the text. Readers are introduced to some important theorems in Nonlinear Analysis, for example, Brouwer fixed point theorem and fundamental theorem of algebras. A chapter on Monotone Dynamical Systems takes care of the new developments in Ordinary Differential Equations and Dynamical Systems.

In this third edition, an introduction to Hamiltonian Systems is included to enhance and complete its coverage on Ordinary Differential Equations with applications in Mathematical Biology and Classical Mechanics.