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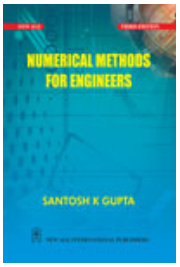

Numerical Methods for Engineers

Gupta, Santosh Kumar , *Professor Dept. of Chemical Engg., University of Petroleum & Energy Studies (UPES) Dehradun, India*

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About the Book:

This book is intended to be a text for either a first or a second course in numerical methods for students in all engineering disciplines. Difficult concepts, which usually pose problems to students are explained in detail and illustrated with solved examples. Enough elementary material that could be covered in the first-level course is included, for example, methods for solving linear and nonlinear algebraic equations, interpolation, differentiation, integration, and simple techniques for integrating ODEs and PDEs (ordinary and partial differential equations).

Advanced techniques and concepts that could form part of a second-level course include Gear`s method for solving ODE-IVPs (initial value problems), stiffness of ODE-IVPs, multiplicity of solutions, convergence characteristics, the orthogonal collocation method for solving ODE-BVPs (boundary value problems) and finite element techniques. An extensive set of graded problems, often with hints, has been included. Some involve simple applications of the concepts and can be solved using a calculator, while several are from real-life situations and require writing computer programs or use of library subroutines. Practice on these is expected to build up the reader's confidence in developing large computer codes.

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About the Author:

Santosh K Gupta is a Distinguished Professor of Chemical Engineering at the University of Petroleum and Energy Studies (UPES), Dehradun, India, a position he took up after his retirement from the IIT Kanpur, India. A graduate of IIT Kanpur in 1968, he obtained his PhD from the University of Pennsylvania, Philadelphia, USA, in 1972. His research interests include modelling, optimization and online optimal control of polymerization reactors, and modelling and multiobjective optimization (using evolutionary techniques) of chemical engineering systems. He has published over 200 research papers in these areas in peer-reviewed International journals, and has also

authored/co-authored the textbooks: Fundamentals of Polymer Science and Engineering, Momentum Transfer Operations, Fluid Mechanics and its Applications, Reaction Engineering of Step-Growth Polymerizations, and Mathematical Methods in Chemical and Environmental Engineering. He has been Visiting Professor at the Department of Chemical Engineering, University of Notre Dame, Notre Dame, IN, USA (1985–87), National University of Singapore (1998–99), University of Wisconsin, Madison, USA(1999–2000), and IIT Bombay, Mumbai (2008–2010), where he was the L & T Chair Professor of Chemical Engineering. He has received several awards and honours.

Contents:

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