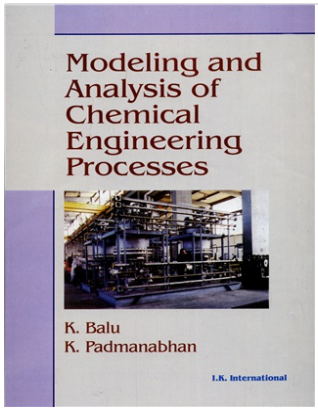
Book Information Sheet



Modeling and Analysis of Chemical Engineering Processes, 1/e

K. Balu & K. Padmanabhan

2007 | 424 pp | Paperback | ISBN: 9788189866310 | Price: 375.00

About the Book

The chemical process industry faces serious problems with regard to new materials and efficient methods of production due to increasing costs of energy, stringent environmental regulations and global competition. A clear understanding of the processes is required in order to solve these problems. One way is through crisp modeling method; another is through an optimal operation of the process to improve profitability and efficiency. The book is in two parts. The first part discusses the methods of modeling chemical engineering processes through well known mathematical methods involving numerical calculations. This includes the recent concepts of Fuzzy logic and neural nets. The second part describes the efficient optimization methods, which are available for the effective application in many chemical processes. This involves methods of search for extrema as well as optimization, with and without constraint relations. Most books on nonlinear programming are of theoretical type, and the exact procedures of computation are often obscure. But in this book, a number of problems have been worked out. In addition to this, computer programs are included for almost all the topics. Due to the intricacy of optimization programs, the flow charts and the program in clear BASIC language have been provided so that the reader can understand the mathematical methods. The book will be useful for students and practising engineers in the field of chemical engineering, biotechnology, environmental engineering, and applied mathematics

Salient Features

- The book is divided in two parts; part I deals with mathematical methods of analysis and modelling in chemical engineering, and part II deals with optimization theory.
- Includes a lot of problems with detailed worked-out solutions.
- Computer programs, algorithms and flowcharts are included for topics explained in the book.

Table of Contents

Part I: Modelling Through Algebraic, Differential and partial Differential Equations Transform Techniques Mathematical Aspects of the Basis of Optimization Methods Large Systems Analysis-Methods

Part II: Extrema of Functions and Search Methods Methods of Numerical Optimization Some Additional Methods for Optimisation and Constrained Optimisation Index Readerrship: Chemical Engineering, Biotechnology, Environmental Engineering and applied mathematics.

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