Fundamentals of Heat and Mass Transfer, 4th Ed. R. C. Dhir, S. A. Horlock, and J. G. G. Hadamard 1999. Heat and mass transfer is a major concern of chemical engineers. It is one of the three main transport processes of interest to chemical engineers. In this book, the information is presented in a clear and straightforward manner, with an emphasis on the fundamentals of the subject and the use of mathematical models to describe and predict heat and mass transfer processes. The book is organized into two parts, which can be used for teaching a two-term course. Part I covers the fundamentals of heat and mass transfer, including the derivation of the governing equations, their solution techniques, and the interpretation of the results. Part II focuses on the use of these equations in the design and analysis of heat exchangers, distillation columns, and other chemical engineering equipment. The book includes numerous examples and problems that illustrate the application of the concepts and techniques discussed. It is intended for use as a textbook in chemical engineering courses and as a reference for practicing chemical engineers.
A HEAT TRANSFER TEXTBOOK

Fundamentals of Momentum, Heat, and Mass Transfer

4th Edition, James R. Welty ... [et Al.].

The focus of this textbook is on the fundamentals of heat and mass transfer, fluid flow, chemical reaction, and other related subjects. The combination of theoretical and experimental investigations with many important practical applications of current interest will make this book of interest to researchers, scientists, engineers, and graduate students, who make use of experimental and theoretical investigations, assessment and enhancement techniques in this multidisciplinary field as well as to researchers in mathematical modelling, computer simulations and information sciences, who make use of experimental and theoretical investigations as a means of critical assessment of models and results derived from advanced numerical simulations and improvement of the developed models and numerical methods.

Mass and Heat Transfer

T. W. Fraser Russell 2008-02-11

This text allows instructors to teach a course on heat and mass transfer that will equip students with the pragmatic, applied skills required by the modern chemical industry. This new approach is a combined presentation of heat and mass transfer, maintaining mathematical rigor while keeping mathematical analysis to a minimum. This allows students to develop a strong conceptual understanding, and teaches them how to become proficient in engineering analysis of mass contactors and heat exchangers and the transport theory used as a basis for determining how critical coefficients depend upon physical properties and fluid motions. Students will first study the engineering analysis and design of equipment important in experiments and for the processing of material at the commercial scale. The second part of the book presents the fundamentals of transport phenomena relevant to these applications. A complete teaching package includes a comprehensive instructor's guide, exercises, case studies, and project assignments.

Numerical Heat Transfer and Fluid Flow

Suharsha Patnak 2018-10-08

This book focuses on heat and mass transfer, fluid flow, chemical reaction, and other related processes that occur in engineering equipment, the natural environment, and living organisms. Using simple algebra and elementary calculus, the author develops numerical methods for predicting these processes mainly based on physical considerations. Through this approach, readers will develop a deeper understanding of the underlying physical aspects of heat transfer and fluid flow as well as improve their ability to analyze and interpret computed results.

Convective Heat and Mass Transfer

S. Mustafa Ozbayasi 2018-06-12

Convective Heat and Mass Transfer, Second Edition, is ideal for the graduate level study of convection heat and mass transfer, with coverage of well-established theory and practice as well as trending topics, such as nanoscale heat transfer and CFD. It is appropriate for both Mechanical and Chemical Engineering courses/modules. Heat Transfer Azziz Beislelioud 2011-01-28 Over the past few decades there has been a prolific increase in research and development in area of heat transfer, heat exchangers and their associated technologies. This book is a collection of current research in the above mentioned areas and discusses experimental, theoretical and calculation approaches and industrial utilizations with modern ideas and methods to study heat transfer for single and multiphase systems. The topics considered include various basic concepts of heat transfer, the fundamental modes of heat transfer (namely conduction, convection and radiation), thermophysical properties, condensation, boiling, freezing, innovative experiments, measurement analysis, theoretical models and simulations, with many real-world problems and important modern applications. The book is divided in four sections: "Heat Transfer in Micro Systems", "Boiling, Freezing and Condensation Heat Transfer", "Heat Transfer and its Assessment", "Heat Transfer Calculations", and each section discusses a wide variety of techniques, methods and applications in accordance with the subjects. The combination of theoretical and experimental investigations with many important practical applications of current interest will make this book of interest to researchers, scientists, engineers, and graduate students, who make use of experimental and theoretical investigations, assessment and enhancement techniques in this multidisciplinary field as well as to researchers in mathematical modelling, computer simulations and information sciences, who make use of experimental and theoretical investigations as a means of critical assessment of models and results derived from advanced numerical simulations and improvement of the developed models and numerical methods.

Handbook of Thermal Plasmas

Yunus A. Cengel 2002-10 CD-ROM contains: the limited academic version of Engineering equation solver(EES) with homework problems.

Instructor's Resource CD-ROM to Accompany Fundamentals of Momentum, Heat and Mass Transfer

James R. Welty

This authoritative reference presents a comprehensive review of the evolution of fundamentals of plasma science and technology over the past five decades. One of the principal challenges of this field has been in its multidisciplinary nature requiring coverage of fundamental plasma physics in plasma generation, transport phenomena under high temperature conditions, involving momentum, heat and mass transfer, high-temperature reaction kinetics, as well as fundamentals of material science under extreme conditions. The book is structured in five distinct parts which are presented in a reader-friendly format allowing for a detailed coverage of different aspects of the science base and engineering aspects of the technology including, plasma generation, mathematical modelling, and diagnostics, and industrial applications of thermal plasma technology. This book is an essential, resource for practicing engineers, research scientists, and graduate students working in the field.

Fundamentals of Momentum, Heat, and Mass Transfer

James R. Welty 1976