

Fundamental Mechanics Of Fluids Currie 4th Edition

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[Fundamental Mechanics of Fluids](#) I.G. Currie 2016-04-19 Fundamental Mechanics of Fluids, Fourth Edition addresses the need for an introductory text that focuses on the basics of fluid mechanics-before concentrating on specialized areas such as ideal-fluid flow and boundary-layer theory. Filling that void for both students and professionals working in different branches of engineering, this versatile ins **Elements of Gasdynamics** Hans Wolfgang Liepmann 1957 The increasing importance of concepts from compressible fluid flow theory for aeronautical applications makes the republication of this first-rate text particularly timely. Intended mainly for aeronautics students, the text will also be helpful to practicing engineers and scientists who work on problems involving the aerodynamics of compressible fluids. Covering the general principles of gas dynamics to provide a working understanding of the essentials of gas flow, the contents of this book form the foundation for a study of the specialized literature and should give the necessary background for reading original papers on the subject. Topics include introductory concepts from thermodynamics, including entropy, reciprocity relations, equilibrium conditions, the law of mass action and condensation; one-dimensional gasdynamics, one-dimensional wave motion, waves in supersonic flow, flow in ducts and wind tunnels, methods of measurement, the equations of frictionless flow, small-perturbation theory, transonic flow, effects of viscosity and conductivity, and much more. The text includes numerous detailed figures and several useful tables, while concluding exercises demonstrate the application of the material in the text and outline additional subjects. Advanced undergraduate or graduate physics and engineering students with at least a working knowledge of calculus and basic physics will profit immensely from studying this outstanding volume. [Fundamentals of Geomorphology](#) Richard Huggett 2011-03-15 This extensively revised and updated third edition of Fundamentals of Geomorphology presents an engaging and comprehensive introduction to geomorphology, exploring the world's landforms from a broad systems perspective. It reflects the latest developments in the field and includes new chapters on geomorphic materials and processes, hillslopes and changing landscapes.

[Introduction to Robotics](#) John J. Craig 2005 Written for senior level or first year graduate level robotics courses, this text includes material from traditional mechanical engineering, control theoretical material and computer science. It includes coverage of rigid-body transformations and forward and inverse positional kinematics.

Fluid and Thermodynamics Kolumban Hutter 2016-07-18 In this book fluid mechanics and thermodynamics (F&T) are approached as interwoven, not disjoint fields. The book starts by analyzing the creeping motion around spheres at rest: Stokes flows, the Oseen correction and the Lagerstrom-Kaplun expansion theories are presented, as is the homotopy analysis. 3D creeping flows and rapid granular avalanches are treated in the context of the shallow flow approximation, and it is demonstrated that uniqueness and stability deliver a natural transition to turbulence modeling at the zero, first order closure level. The difference-quotient turbulence model (DQTM) closure scheme reveals the importance of the turbulent closure schemes' non-locality effects. Thermodynamics is presented in the form of the first and second laws, and irreversibility is expressed in terms of an entropy balance. Explicit expressions for constitutive postulates are in conformity with the dissipation inequality. Gas dynamics offer a first application of combined F&T. The book is rounded out by a chapter on dimensional analysis, similitude, and physical experiments.

Civil Engineer's Reference Book L S Blake 2013-10-22 Civil Engineer's Reference Book, Fourth Edition provides civil engineers with reports on design and construction practices in the UK and overseas. It gives a concise presentation of theory and practice in the many branches of a civil engineer's profession and it enables them to study a subject in greater depth. The book discusses some improvements in earlier practices, for example in surveying, geotechnics, water management, project management, underwater working, and the control and use of materials. Other changes covered are from the evolving needs of clients for almost all forms of construction, maintenance and repair. Another major change is the introduction of new national and Euro-codes based on limit state design, covering most aspects of structural engineering. The fourth edition incorporates these advances and, at the same time, gives greater prominence to the special problems relating to work overseas, with differing client requirements and climatic conditions. Chapters 1 to 10 provide engineers, at all levels of development, with 'lecture notes' on the basic theories of civil engineering. Chapters 11 to 44 cover the practice of design and construction in many of the fields of civil engineering. Civil engineers, architects, lawyers, mechanical engineers, insurers, clients, and students of civil engineering will find benefit in the use of this text.

[Problems and Solutions on Thermodynamics and Statistical Mechanics](#) Yung-kuo Lim 1990 Volume 5.

Fluid Mechanics Pijush K. Kundu 2012 Fluid mechanics, the study of how fluids behave and interact under various forces and in various applied situations-whether in the liquid or gaseous state or both-is introduced and comprehensively covered in this widely adopted text. Revised and updated by Dr. David Dowling, Fluid Mechanics, Fifth Edition is suitable for both a first or second course in fluid mechanics at the graduate or advanced undergraduate level. The leading advanced general text on fluid mechanics, Fluid Mechanics, 5e includes a free copy of the DVD "Multimedia Fluid Mechanics," second edition. With the inclusion of the DVD, students can gain additional insight about fluid flows through nearly 1,000 fluids video clips, can conduct flow simulations in any of more than 20 virtual labs and simulations, and can view dozens of other new interactive demonstrations and animations, thereby enhancing their fluid mechanics learning experience. Text has been reorganized to provide a better flow from topic to topic and to consolidate portions that belong together. Changes made to the book's pedagogy accommodate the needs of students who have completed minimal prior study of fluid mechanics. More than 200 new or revised end-of-chapter problems illustrate fluid mechanical principles and draw on phenomena that can be observed in everyday life. Includes free Multimedia Fluid Mechanics 2e DVD

[Fundamental Mechanics of Fluids, Fourth Edition](#) I.G. Currie 2012-08-01 Fundamental Mechanics of Fluids, Fourth Edition addresses the need for an introductory text that focuses on the basics of fluid mechanics—before concentrating on specialized areas such as ideal-fluid flow and boundary-layer theory. Filling that void for both students and professionals working in different branches of engineering, this versatile instructional resource comprises five flexible, self-contained sections: Governing Equations deals with the derivation of the basic conservation laws, flow kinematics, and some basic theorems of fluid mechanics. Ideal-Fluid Flow covers two- and three-dimensional potential flows and surface waves. Viscous Flows of Incompressible Fluids discusses exact solutions, low-Reynolds-number approximations, boundary-layer theory, and buoyancy-driven flows. Compressible Flow of Inviscid Fluids addresses shockwaves as well as one- and multidimensional flows. Methods of Mathematical Analysis summarizes some commonly used analysis techniques. Additional appendices

offer a synopsis of vectors, tensors, Fourier series, thermodynamics, and the governing equations in the common coordinate systems. The book identifies the phenomena associated with the various properties of compressible, viscous fluids in unsteady, three-dimensional flow situations. It provides techniques for solving specific types of fluid-flow problems, and it covers the derivation of the basic equations governing the laminar flow of Newtonian fluids, first assessing general situations and then shifting focus to more specific scenarios. The author illustrates the process of finding solutions to the governing equations. In the process, he reveals both the mathematical methodology and physical phenomena involved in each category of flow situation, which include ideal, viscous, and compressible fluids. This categorization enables a clear explanation of the different solution methods and the basis for the various physical consequences of fluid properties and flow characteristics. Armed with this new understanding, readers can then apply the appropriate equation results to deal with the particular circumstances of their own work.

[Advanced Mechanics of Materials](#) Roman Solecki 2003 This is an advanced mechanics of materials textbook dedicated to senior undergraduate or beginning graduate students in mechanical, civil, and aeronautical engineering departments. The text covers subject matter generally referred to as advanced mechanics of materials or advanced strength of materials. The course is commonly called Intermediate/Advanced Strength of Materials, Advanced Mechanics of Materials, or Advanced Mechanics of Solids. This course follows an elementary Solid Mechanics (Vable OUP 2002) course and is taken by most structural engineering majors and aero majors. Unique features of Solecki/Conant include introduction to model topics such as fracture mechanics and viscoelasticity. Unlike the competition, the textbook introduces more applications to contemporary practice, as well as modern computer tools such as MATLAB.

[A Physical Introduction to Fluid Mechanics](#) Alexander J. Smits 2000 Uncover Effective Engineering Solutions to Practical Problems With its clear explanation of fundamental principles and emphasis on real world applications, this practical text will motivate readers to learn. The author connects theory and analysis to practical examples drawn from engineering practice. Readers get a better understanding of how they can apply these concepts to develop engineering answers to various problems. By using simple examples that illustrate basic principles and more complex examples representative of engineering applications throughout the text, the author also shows readers how fluid mechanics is relevant to the engineering field. These examples will help them develop problem-solving skills, gain physical insight into the material, learn how and when to use approximations and make assumptions, and understand when these approximations might break down. Key Features of the Text * The underlying physical concepts are highlighted rather than focusing on the mathematical equations. * Dimensional reasoning is emphasized as well as the interpretation of the results. * An introduction to engineering in the environment is included to spark reader interest. * Historical references throughout the chapters provide readers with the rich history of fluid mechanics.

[Solved Practical Problems in Fluid Mechanics](#) Carl J. Schaschke 2015-08-18 Contains Fluid Flow Topics Relevant to Every EngineerBased on the principle that many students learn more effectively by using solved problems, Solved Practical Problems in Fluid Mechanics presents a series of worked examples relating fluid flow concepts to a range of engineering applications. This text integrates simple mathematical approaches tha

Quantum Mechanics Via Lie Algebras Arnold Neumaier 2020-10-04

Incompressible Flow Ronald L. Panton 2013-08-05 The most teachable book on incompressible flow— now fully revised, updated, and expanded Incompressible Flow, Fourth Edition is the updated and revised edition of Ronald Panton's classic text. It continues a respected tradition of providing the most comprehensive coverage of the subject in an exceptionally clear, unified, and carefully paced introduction to advanced concepts in fluid mechanics. Beginning with basic principles, this Fourth Edition patiently develops the math and physics leading to major theories. Throughout, the book provides a unified presentation of physics, mathematics, and engineering applications, liberally supplemented with helpful exercises and example problems. Revised to reflect students' ready access to mathematical computer programs that have advanced features and are easy to use, Incompressible Flow, Fourth Edition includes: Several more exact solutions of the Navier-Stokes equations Classic-style Fortran programs for the Hiemenz flow, the Psi-Omega method for entrance flow, and the laminar boundary layer program, all revised into MATLAB A new discussion of the global vorticity boundary restriction A revised vorticity dynamics chapter with new examples, including the ring line vortex and the Fraenkel-Norbury vortex solutions A discussion of the different behaviors that occur in subsonic and supersonic steady flows Additional emphasis on composite asymptotic expansions Incompressible Flow, Fourth Edition is the ideal coursebook for classes in fluid dynamics offered in mechanical, aerospace, and chemical engineering programs.

The Linearized Theory of Elasticity William S. Slaughter 2012-12-06 This book is derived from notes used in teaching a first-year graduate-level course in elasticity in the Department of Mechanical Engineering at the University of Pittsburgh. This is a modern treatment of the linearized theory of elasticity, which is presented as a specialization of the general theory of continuum mechanics. It includes a comprehensive introduction to tensor analysis, a rigorous development of the governing field equations with an emphasis on recognizing the assumptions and approximations in herent in the linearized theory, specification of boundary conditions, and a survey of solution methods for important classes of problems. Two- and three-dimensional problems, torsion of noncircular cylinders, variational methods, and complex variable methods are covered. This book is intended as the text for a first-year graduate course in me chanical or civil engineering. Sufficient depth is provided such that the text can be used without a prerequisite course in continuum mechanics, and the material is presented in such a way as to prepare students for subsequent courses in nonlinear elasticity, inelasticity, and fracture mechanics. Alter natively, for a course that is preceded by a course in continuum mechanics, there is enough additional content for a full semester of linearized elasticity. *Computational Fluid Dynamics: Principles and Applications* Jiri Blazek 2005-12-20 Computational Fluid Dynamics (CFD) is an important design tool in engineering and also a substantial research tool in various physical sciences as well as in biology. The objective of this book is to provide university students with a solid foundation for understanding the numerical methods employed in today's CFD and to familiarise them with modern CFD codes by hands-on experience. It is also intended for engineers and scientists starting to work in the field of CFD or for those who apply CFD codes. Due to the detailed index, the text can serve as a reference handbook too. Each chapter includes an extensive bibliography, which provides an excellent basis for further studies.

[Stability of Axially Moving Materials](#) Nikolay Banichuk 2019-09-05 This book discusses the stability of axially moving materials, which are encountered in process industry applications such as papermaking. A special emphasis is given to analytical and semianalytical approaches. As preliminaries, we consider a variety of problems across mechanics involving bifurcations, allowing to introduce the techniques in a

simplified setting. In the main part of the book, the fundamentals of the theory of axially moving materials are presented in a systematic manner, including both elastic and viscoelastic material models, and the connection between the beam and panel models. The issues that arise in formulating boundary conditions specifically for axially moving materials are discussed. Some problems involving axially moving isotropic and orthotropic elastic plates are analyzed. Analytical free-vibration solutions for axially moving strings with and without damping are derived. A simple model for fluid-structure interaction of an axially moving panel is presented in detail. This book is addressed to researchers, industrial specialists and students in the fields of theoretical and applied mechanics, and of applied and computational mathematics.

An Introduction to Fluid Mechanics Chung Fang 2018-12-31 This textbook provides a concise introduction to the mathematical theory of fluid motion with the underlying physics. Different branches of fluid mechanics are developed from general to specific topics. At the end of each chapter carefully designed problems are assigned as homework, for which selected fully worked-out solutions are provided. This book can be used for self-study, as well as in conjunction with a course in fluid mechanics.

Applications of Fluid Dynamics M.K. Singh 2017-11-04 The book presents high-quality papers presented at 3rd International Conference on Applications of Fluid Dynamics (ICAFD 2016) organized by Department of Applied Mathematics, ISM Dhanbad, Jharkhand, India in association with Fluid Mechanics Group, University of Botswana, Botswana. The main theme of the Conference is "Sustainable Development in Africa and Asia in context of Fluid Dynamics and Modeling Approaches". The book is divided into seven sections covering all applications of fluid dynamics and their allied areas such as fluid dynamics, nanofluid, heat and mass transfer, numerical simulations and investigations of fluid dynamics, magnetohydrodynamics flow, solute transport modeling and water jet, and miscellaneous. The book is a good reference material for scientists and professionals working in the field of fluid dynamics.

Vectors, Tensors and the Basic Equations of Fluid Mechanics Rutherford Aris 2012-08-28 Introductory text, geared toward advanced undergraduate and graduate students, applies mathematics of Cartesian and general tensors to physical field theories and demonstrates them in terms of the theory of fluid mechanics. 1962 edition.

Chemical Engineering Fluid Mechanics Ron Darby 2016-11-30 This book provides readers with the most current, accurate, and practical fluid mechanics related applications that the practicing BS level engineer needs today in the chemical and related industries, in addition to a fundamental understanding of these applications based upon sound fundamental basic scientific principles. The emphasis remains on the problem solving, and the new edition includes many more examples.

Mechanics of Fluids SI Version Merle C. Potter 2012-08-08 MECHANICS OF FLUIDS presents fluid mechanics in a manner that helps students gain both an understanding of, and an ability to analyze the important phenomena encountered by practicing engineers. The authors succeed in this through the use of several pedagogical tools that help students visualize the many difficult-to-understand phenomena of fluid mechanics. Explanations are based on basic physical concepts as well as mathematics which are accessible to undergraduate engineering students. This fourth edition includes a Multimedia Fluid Mechanics DVD-ROM which harnesses the interactivity of multimedia to improve the teaching and learning of fluid mechanics by illustrating fundamental phenomena and conveying fascinating fluid flows.

Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.
Quantum Theory: Concepts and Methods A. Peres 2006-06-01 There are many excellent books on quantum theory from which one can learn to compute energy levels, transition rates, cross sections, etc. The theoretical rules given in these books are routinely used by physicists to compute observable quantities. Their predictions can then be compared with experimental data. There is no fundamental disagreement among physicists on how to use the theory for these practical purposes. However, there are profound differences in their opinions on the ontological meaning of quantum theory. The purpose of this book is to clarify the conceptual meaning of quantum theory, and to explain some of the mathematical methods which it utilizes. This text is not concerned with specialized topics such as atomic structure, or strong or weak interactions, but with the very foundations of the theory. This is not, however, a book on the philosophy of science. The approach is pragmatic and strictly instrumentalist. This attitude will undoubtedly antagonize some readers, but it has its own logic: quantum phenomena do not occur in a Hilbert space, they occur in a laboratory.

Fundamental Mechanics of Fluids, Third Edition Iain G. Currie 2002-12-12 Retaining the features that made previous editions perennial favorites, Fundamental Mechanics of Fluids, Third Edition illustrates basic equations and strategies used to analyze fluid dynamics, mechanisms, and behavior, and offers solutions to fluid flow dilemmas encountered in common engineering applications. The new edition contains completely reworked line drawings, revised problems, and extended end-of-chapter questions for clarification and expansion of key concepts. Includes appendices summarizing vectors, tensors, complex variables, and governing equations in common coordinate systems Comprehensive in scope and breadth, the Third Edition of Fundamental Mechanics of Fluids discusses: Continuity, mass, momentum, and energy One-, two-, and three-dimensional flows Low Reynolds number solutions Buoyancy-driven flows Boundary layer theory Flow measurement Surface waves Shock waves

Fundamentals of Bioinformatics S. Harisha 2007-01-01 Bioinformatics is an upcoming discipline of Life Sciences. It is an integration of computer science, and mathematical and statistical methods to manage and analyze the biological data. The fundamental issues that directly impact an understanding of life at structural, functional and molecular level, and regulation of gene expression can be studied by using bioinformatics tools. The Fundamentals of Bioinformatics is a comprehensive book for undergraduates, postgraduates and research scholars, who urge to learn about theoretical as well as practical aspects of this upcoming field. This pioneering book provides up-to-date information on bioinformatics and emphasizes recent topics like drug design technology, pharmacogenomics, proteomics and genomics. The present textbook will be an asset to Life sciences and technology institutions, since it has been designed based on the prescribed syllabus of various Indian Universities and aboard, and cover all the important topics on Bioinformatics.

A Modern Course in Aeroelasticity E.H. Dowell 2012-12-06 Aeroelasticity is the study of flexible structures situated in a flowing fluid. Its modern origins are in the field of aerospace engineering, but it has now expanded to include phenomena arising in other fields such as bioengineering, civil engineering, mechanical engineering and nuclear engineering. The present volume is a teaching text for a first, and possibly second, course in aeroelasticity. It will also be useful as a reference source on the fundamentals of the subject for practitioners. In this third edition, several chapters have been revised and three new chapters added. The latter include a brief introduction to `Experimental Aeroelasticity', an overview of a frontier of research `Nonlinear Aeroelasticity', and the first connected, authoritative account of `Aeroelastic Control' in book form. The authors are drawn from a range of fields including aerospace engineering, civil engineering, mechanical engineering, rotorcraft and turbomachinery. Each author is a leading expert in the subject of his chapter and has many years of experience in consulting, research and teaching.

An Analytical Mechanics Framework for Flow-Oscillator Modeling of Vortex-Induced Bluff-Body Oscillations Sohrob Mottaghi 2019-08-08 This self-contained book provides an introduction to the flow-oscillator modeling of vortex-induced bluff-body oscillations. One of the great challenges in engineering science also happens to be one of engineering design - the modeling, analysis and design of vibrating structures driven by fluid motion. The literature on fluid-structure interaction is vast, and it can be said to comprise a large fraction of all papers published in the mechanical sciences. This book focuses on the vortex-induced oscillations of an immersed body, since, although the importance of the subject has long been known, it is only during the past fifty years that there have been concerted efforts to analytically model the general behavior of the coupling between vortex shedding and structural oscillations. At the same time, experimentalists have been gathering data on such interactions in order to help define the various regimes of behavior. This data is critical to our understanding and to those who develop analytical models, as can be seen in this book. The fundamental bases for the modeling developed in this book are

the variational principles of analytical dynamics, in particular Hamilton's principle and Jourdain's principle, considered great intellectual achievements on par with Newton's laws of motion. Variational principles have been applied in numerous disciplines, including dynamics, optics and quantum mechanics. Here, we apply variational principles to the development of a framework for the modeling of flow-oscillator models of vortex-induced oscillations.

Convective Heat Transfer Sadik Kakac 2013-12-17 Intended for readers who have taken a basic heat transfer course and have a basic knowledge of thermodynamics, heat transfer, fluid mechanics, and differential equations, Convective Heat Transfer, Third Edition provides an overview of phenomenological convective heat transfer. This book combines applications of engineering with the basic concepts o **Fundamentals of Fracture Mechanics** Tribikram Kundu 2008-01-30 Almost all books available on fracture mechanics cover the majority of topics presented in this book, and often much, much more. While great as references, this makes teaching from them more difficult because the materials are not typically presented in the order that most professors cover them in their lectures and more than half the information p

Fundamentals of Fluid Mechanics Bruce Roy Munson 1999

Intermediate Mechanics of Materials Madhukar Vable 2013-12-10 Intermediate Mechanics of Materials is designed for the second course in mechanics of materials. In the first course, the students are introduced to mechanics of materials variables, the relationship between these variables, and the use of these variables in the development of the simplest theories of one-dimensional structural elements of axial rods, torsion of circular shafts, and symmetric bending of beams. Intermediate Mechanics of Materials builds on this foundation by incorporating temperature, material non-homogeneities, material non-linearities, and geometric complexities. This book is independent of the one used in the learning and teaching of the first course of mechanics of materials. The growth of new disciplines such as plastic and biomedical engineering has increased emphasis on incorporating non-linear material behavior in engineering design and analysis.

Incorporating material non-homogeneity is also growing with the increased use of metal matrix composites, polymer composites, reinforced concrete, and wooden beams stiffened with steel strips and other laminated structures. Residual stresses to increase load carrying capacity of metals, unsymmetric bending, shear center, beam and shaft vibrations, beams on elastic foundations, Timoshenko beams, are all complexities that are acquiring greater significance in engineering. In Intermediate Mechanics of Materials, the author shows the modularity of the logic, shown on the front cover of the book. The repetitive use of this logic demonstrates the ease with which the aforementioned complexities can be incorporated into the simple theories of the first course and used for design and analysis of simple structures. For additional details see madhuvable.org

Fluid Mechanics Franz Durst 2008-09-01 Fluid mechanics embraces engineering, science, and medicine. This book's logical organization begins with an introductory chapter summarizing the history of fluid mechanics and then moves on to the essential mathematics and physics needed to understand and work in fluid mechanics. Analytical treatments are based on the Navier-Stokes equations. The book also fully addresses the numerical and experimental methods applied to flows. This text is specifically written to meet the needs of students in engineering and science. Overall, readers get a sound introduction to fluid mechanics.

Fundamental Mechanics of Fluids, Third Edition Iain G. Currie 2002-12-12 Retaining the features that made previous editions perennial favorites, Fundamental Mechanics of Fluids, Third Edition illustrates basic equations and strategies used to analyze fluid dynamics, mechanisms, and behavior, and offers solutions to fluid flow dilemmas encountered in common engineering applications. The new edition contains completely reworked line drawings, revised problems, and extended end-of-chapter questions for clarification and expansion of key concepts. Includes appendices summarizing vectors, tensors, complex variables, and governing equations in common coordinate systems Comprehensive in scope and breadth, the Third Edition of Fundamental Mechanics of Fluids discusses: Continuity, mass, momentum, and energy One-, two-, and three-dimensional flows Low Reynolds number solutions Buoyancy-driven flows Boundary layer theory Flow measurement Surface waves Shock waves

Heat Transfer Gregory Nellis 2009 This book provides engineers with the tools to solve real-world heat transfer problems. It includes advanced topics not covered in other books on the subject. The examples are complex and timely problems that are inherently interesting. It integrates Maple, MATLAB, FEHT, and Engineering Equation Solver (EES) directly with the heat transfer material.

Mechanics of Fluids Irving Herman Shames 2003 In keeping with previous editions, this book offers a strong conceptual approach to fluids, based on mechanics principles. The author provides rigorous coverage of underlying math and physics principles, and establishes clear links between the basics of fluid flow and subsequent advanced topics like compressible flow and viscous fluid flow.

Fundamental Mechanics of Fluids I.G. Currie 2016-04-19 Fundamental Mechanics of Fluids, Fourth Edition addresses the need for an introductory text that focuses on the basics of fluid mechanics-before concentrating on specialized areas such as ideal-fluid flow and boundary-layer theory. Filling that void for both students and professionals working in different branches of engineering, this versatile ins **Dynamics of Polymeric Liquids, Volume 1** R. B. Bird 1987-05-27 Dynamics of Polymeric Liquids, Second Edition Volume 2: Kinetic Theory R. Byron Bird, Charles F. Curtiss, Robert C. Armstrong and Ole Hassager Volume Two deals with the molecular aspects of polymer rheology and fluid dynamics. It is the only book currently available dealing with kinetic theory and its relation to nonlinear rheological properties. Considerable emphasis is given to the connection between kinetic theory results and experimental data. The second edition contains new material on the basis for molecular modeling, the application of phase-space theory to dilute solutions, kinetic theory of melts and melt mixtures, and network theories. 1987 (0 471-80244-1) 450 pp.

Gas Transport in Porous Media Clifford K. Ho 2006-10-07 CLIFFORD K. HOAND STEPHEN W. WEBB Sandia National Laboratories, P. O. Box 5800, Albuquerque, NM 87185, USA Gas and vapor transport in porous media occur in a number of important applications includingdryingofindustrialandfoodproducts,oilandgasexploration,environm- tal remediation of contaminated sites, and carbon sequestration. Understanding the fundamental mechanisms and processes of gas and vapor transport in porous media allows models to be used to evaluate and optimize the performance and design of these systems. In this book, gas and vapor are distinguished by their available states at stan- ? dard temperature and pressure (20 C, 101 kPa). If the gas-phase constituent can also exist as a liquid phase at standard temperature and pressure (e. g. , water, ethanol, toluene, trichloroethylene), it is considered a vapor. If the gas-phase constituent is non-condensable at standard temperature and pressure (e. g. , oxygen, carbon di- ide, helium, hydrogen, propane), it is considered a gas. The distinction is important because different processes affect the transport and behavior of gases and vapors in porous media. For example, mechanisms specific to vapors include vapor-pressure lowering and enhanced vapor diffusion, which are caused by the presence of a g-phase constituent interacting with its liquid phase in an unsaturated porous media. In addition, the "heat-pipe" exploits isothermal latent heat exchange during evaporation and condensation to effectively transfer heat in designed and natural systems.

Foundations of Fluid Mechanics S.W. Yuan 1988

Buoyancy-Driven Flows Eric Chassignet 2012-03-05 Buoyancy is one of the main forces driving flows on our planet, especially in the oceans and atmosphere. These flows range from buoyant coastal currents to dense overflows in the ocean, and from avalanches to volcanic pyroclastic flows on the Earth's surface. This book brings together contributions by leading world scientists to summarize our present theoretical, observational, experimental and modeling understanding of buoyancy-driven flows. Buoyancy-driven currents play a key role in the global ocean circulation and in climate variability through their impact on deep-water formation. Buoyancy-driven currents are also primarily responsible for the redistribution of fresh water throughout the world's oceans. This book is an invaluable resource for advanced students and researchers in oceanography, geophysical fluid dynamics, atmospheric science and the wider Earth sciences who need a state-of-the-art reference on buoyancy-driven flows.

