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#### FLUID MECHANICS

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Academic Press **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**

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#### FLUID MECHANICS

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Academic Press **The classic textbook on fluid mechanics is revised and updated by Dr. David Dowling to better illustrate this important subject for modern students. With topics and concepts presented in a clear and accessible way, Fluid Mechanics guides students from the fundamentals to the analysis and application of fluid mechanics, including compressible flow and such diverse applications as aerodynamics and geophysical fluid mechanics. Its broad and deep coverage is ideal for both a first or second course in fluid dynamics at the graduate or advanced undergraduate level, and is well-suited to the needs of modern scientists, engineers, mathematicians, and others seeking fluid mechanics knowledge. Over 100 new examples designed to illustrate the application of the various concepts and equations featured in the text A completely new chapter on computational fluid dynamics (CFD) authored by Prof. Gretar Tryggvason of the University of Notre Dame. This new CFD chapter includes sample Matlab™ codes and 20 exercises New material on elementary kinetic theory, non-Newtonian constitutive relationships, internal and external rough-wall turbulent flows, Reynolds-stress closure models, acoustic source terms, and unsteady one-dimensional gas dynamics Plus 110 new exercises and nearly 100 new figures**

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#### ESSENTIAL COMPUTATIONAL FLUID DYNAMICS

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John Wiley & Sons **Provides a clear, concise, and self-contained introduction to Computational Fluid Dynamics (CFD) This comprehensively updated new edition covers the fundamental concepts and main methods of modern Computational Fluid Dynamics (CFD). With expert guidance and a wealth of useful techniques, the book offers a clear, concise, and accessible account of the essentials needed to perform and interpret a CFD analysis. The new edition adds a plethora of new information on such topics as the techniques of interpolation, finite volume discretization on unstructured grids, projection methods, and RANS turbulence modeling. The book has been thoroughly edited to improve clarity and to reflect the recent changes in the practice of CFD. It also features a large number of new end-of-chapter problems. All the attractive features that have contributed to the success of the first edition are retained by this version. The book remains an indispensable guide, which: Introduces CFD to students and working professionals in the areas of practical applications,**

such as mechanical, civil, chemical, biomedical, or environmental engineering Focuses on the needs of someone who wants to apply existing CFD software and understand how it works, rather than develop new codes Covers all the essential topics, from the basics of discretization to turbulence modeling and uncertainty analysis Discusses complex issues using simple worked examples and reinforces learning with problems Is accompanied by a website hosting lecture presentations and a solution manual Essential Computational Fluid Dynamics, Second Edition is an ideal textbook for senior undergraduate and graduate students taking their first course on CFD. It is also a useful reference for engineers and scientists working with CFD applications.

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### COMMENTARY ON FLUID MECHANICS

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Arnaldo Rodriguez-Gonzalez This textbook on fluid mechanics is the result of a series of lecture notes I wrote while serving as a teaching assistant for the introductory fluid mechanics course at Cornell, designed to be read as a complement for introductory learners of fluid mechanics alongside a more generalized text—many of which you may find in the bibliography section at the end of the text. It was created, in part, to address the questions I saw most often from my students that the canon of introductory fluid mechanics textbooks couldn't answer. What is viscosity, really? Why are the Navier-Stokes equations so difficult to solve, and how do you derive them? Why is drag sometimes linear and sometimes quadratic, but never cubic? In any case, I hope you will find my answers to these questions satisfactory.

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### ADVANCED FLUID MECHANICS

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Academic Press Fluid mechanics is the study of how fluids behave and interact under various forces and in various applied situations, whether in liquid or gas state or both. The author of Advanced Fluid Mechanics compiles pertinent information that are introduced in the more advanced classes at the senior level and at the graduate level. "Advanced Fluid Mechanics courses typically cover a variety of topics involving fluids in various multiple states (phases), with both elastic and non-elastic qualities, and flowing in complex ways. This new text will integrate both the simple stages of fluid mechanics ("Fundamentals") with those involving more complex parameters, including Inviscid Flow in multi-dimensions, Viscous Flow and Turbulence, and a succinct introduction to Computational Fluid Dynamics. It will offer exceptional pedagogy, for both classroom use and self-instruction, including many worked-out examples, end-of-chapter problems, and actual computer programs that can be used to reinforce theory with real-world applications. Professional engineers as well as Physicists and Chemists working in the analysis of fluid behavior in complex systems will find the contents of this book useful. All manufacturing companies involved in any sort of systems that encompass fluids and fluid flow analysis (e.g., heat exchangers, air conditioning and refrigeration, chemical processes, etc.) or energy generation (steam boilers, turbines and internal combustion engines, jet propulsion systems, etc.), or fluid systems and fluid power (e.g., hydraulics, piping systems, and so on) will reap the benefits of this text. Offers detailed derivation of fundamental equations for better comprehension of more advanced mathematical analysis Provides groundwork for more advanced topics on boundary layer analysis, unsteady flow, turbulent modeling, and computational fluid dynamics Includes worked-out examples and end-of-chapter problems as well as a companion web site with sample computational programs and Solutions Manual

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### MITIGATION OF HYDRODYNAMIC RESISTANCE

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### METHODS TO REDUCE HYDRODYNAMIC DRAG

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World Scientific This text presents the state of the art in friction drag/resistance reduction technologies for BODIES and crafts operating in liquids at and beneath the free surface. It is useful for professionals with backgrounds in advanced fluid dynamics as well as by academics teaching introductory graduate courses in this area. Active control of resistance will include a discussion of friction reduction, for example through the injection of gas that can form air layers and polymers that initially reside adjacent to the hull, including the use of partial and super cavities. The book discusses passive resistance control achieved through changes in the overall hull shape and appendages, including the application of lifting bodies, bulbous bows, and stern flaps. It also addresses passive reduction of skin friction through the application of hull coatings and other elements of hull husbandry. Contents: Introduction Active Techniques: Modification of Drag by Polymer Injection Friction Drag Reduction by Bubble/Gas Injection Transition from BDR and Air Layer Drag Reduction Friction Drag Reduction by Partial Air Cavities or PCDR Passive Techniques: Drag Reduction by Super and Partial Cavities Super-Hydrophobic Surfaces and Coatings Passive Resistance-Mitigation by Appendages: Bulbous Bows, Stern Flaps and Wedges, and Lifting Bodies Readership: Professionals, academics, researchers, and graduate students in ocean engineering, mechanical engineering, fluid mechanics and tribology. Keywords: Drag Reduction; Air Layers; Air Cavities; Polymer Injection; Bubble/Gas Injection; Hydrophobic Surfaces; Passive Drag Mitigation

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## INCOMPRESSIBLE FLOW

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[John Wiley & Sons](#) 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.

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## ADVANCED MECHANICS OF MATERIALS AND APPLIED ELASTICITY

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[Pearson Education](#) This systematic exploration of real-world stress analysis has been completely updated to reflect state-of-the-art methods and applications now used in aeronautical, civil, and mechanical engineering, and engineering mechanics. Distinguished by its exceptional visual interpretations of solutions, **Advanced Mechanics of Materials and Applied Elasticity** offers in-depth coverage for both students and engineers. The authors carefully balance comprehensive treatments of solid mechanics, elasticity, and computer-oriented numerical methods—preparing readers for both advanced study and professional practice in design and analysis. This major revision contains many new, fully reworked, illustrative examples and an updated problem set—including many problems taken directly from modern practice. It offers extensive content improvements throughout, beginning with an all-new introductory chapter on the fundamentals of materials mechanics and elasticity. Readers will find new and updated coverage of plastic behavior, three-dimensional Mohr's circles, energy and variational methods, materials, beams, failure criteria, fracture mechanics, compound cylinders, shrink fits, buckling of stepped columns, common shell types, and many other topics. The authors present significantly expanded and updated coverage of stress concentration factors and contact stress developments. Finally, they fully introduce computer-oriented approaches in a comprehensive new chapter on the finite element method.

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## FLOW CONTROL TECHNIQUES AND APPLICATIONS

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[Cambridge University Press](#) Master the theory, applications and control mechanisms of flow control techniques.

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## ELASTICITY AND FLUID DYNAMICS

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## VOLUME 3 OF MODERN CLASSICAL PHYSICS

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[Princeton University Press](#) A groundbreaking textbook on twenty-first-century fluids and elastic solids and their applications Kip Thorne and Roger Blandford's monumental **Modern Classical Physics** is now available in five stand-alone volumes that make ideal textbooks for individual graduate or advanced undergraduate courses on statistical physics; optics; elasticity and fluid dynamics; plasma physics; and relativity and cosmology. Each volume teaches the fundamental concepts, emphasizes modern, real-world applications, and gives students a physical and intuitive understanding of the subject. **Elasticity and Fluid Dynamics** provides an essential introduction to these subjects. Fluids and elastic solids are everywhere—from Earth's crust and skyscrapers to ocean currents and airplanes. They are central to modern physics, astrophysics, the Earth sciences, biophysics, medicine, chemistry, engineering, and technology, and this centrality has intensified in recent years—so much so that a basic understanding of the behavior of elastic solids and fluids should be part of the repertoire of every physicist and engineer and almost every other natural scientist. While both elasticity and fluid dynamics involve continuum physics and use similar mathematical tools and modes of reasoning, each subject can be readily understood without the other, and the book allows them to be taught independently, with the first two chapters introducing and covering elasticity and the last six doing the same for fluid dynamics. The book also can serve as supplementary reading for many other courses, including in astrophysics, geophysics, and aerodynamics. Includes many exercise problems Features color figures, suggestions for further reading, extensive cross-references, and a detailed index Optional "Track 2" sections make this an ideal book for a one-quarter or one-semester course in elasticity, fluid dynamics, or continuum physics An online illustration package

is available to professors

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## **INTRODUCTION TO PROBABILITY MODELS**

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Elsevier Ross's classic bestseller has been used extensively by professionals and as the primary text for a first undergraduate course in applied probability. With the addition of several new sections relating to actuaries, this text is highly recommended by the Society of Actuaries.

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## **FUNDAMENTALS OF INCOMPRESSIBLE FLUID FLOW**

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Springer Nature This highly informative and carefully presented book offers a comprehensive overview of the fundamentals of incompressible fluid flow. The textbook focuses on foundational topics to more complex subjects such as the derivation of Navier-Stokes equations, perturbation solutions, inviscid outer and inner solutions, turbulent flows, etc. The author has included end-of-chapter problems and worked examples to augment learning and self-testing. This book will be a useful reference for students in the area of mechanical and aerospace engineering.

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## **SPECTRAL METHODS IN CHEMISTRY AND PHYSICS**

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## **APPLICATIONS TO KINETIC THEORY AND QUANTUM MECHANICS**

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Springer This book is a pedagogical presentation of the application of spectral and pseudospectral methods to kinetic theory and quantum mechanics. There are additional applications to astrophysics, engineering, biology and many other fields. The main objective of this book is to provide the basic concepts to enable the use of spectral and pseudospectral methods to solve problems in diverse fields of interest and to a wide audience. While spectral methods are generally based on Fourier Series or Chebychev polynomials, non-classical polynomials and associated quadratures are used for many of the applications presented in the book. Fourier series methods are summarized with a discussion of the resolution of the Gibbs phenomenon. Classical and non-classical quadratures are used for the evaluation of integrals in reaction dynamics including nuclear fusion, radial integrals in density functional theory, in elastic scattering theory and other applications. The subject matter includes the calculation of transport coefficients in gases and other gas dynamical problems based on spectral and pseudospectral solutions of the Boltzmann equation. Radiative transfer in astrophysics and atmospheric science, and applications to space physics are discussed. The relaxation of initial non-equilibrium distributions to equilibrium for several different systems is studied with the Boltzmann and Fokker-Planck equations. The eigenvalue spectra of the linear operators in the Boltzmann, Fokker-Planck and Schrödinger equations are studied with spectral and pseudospectral methods based on non-classical orthogonal polynomials. The numerical methods referred to as the Discrete Ordinate Method, Differential Quadrature, the Quadrature Discretization Method, the Discrete Variable Representation, the Lagrange Mesh Method, and others are discussed and compared. MATLAB codes are provided for most of the numerical results reported in the book - see Link under 'Additional Information' on the the right-hand column.

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## **ANALYTICAL MECHANICS**

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## **MODERN CLASSICAL PHYSICS**

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## **OPTICS, FLUIDS, PLASMAS, ELASTICITY, RELATIVITY, AND STATISTICAL PHYSICS**

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Princeton University Press A groundbreaking text and reference book on twenty-first-century classical physics and its applications This first-year graduate-level text and reference book covers the fundamental concepts and twenty-first-century applications of six major areas of classical physics that every masters- or PhD-level physicist should be exposed to, but often isn't: statistical physics, optics (waves of all sorts), elastodynamics, fluid mechanics, plasma physics, and special and general relativity and cosmology. Growing out of a full-year course that the eminent researchers Kip Thorne and Roger Blandford taught at Caltech for almost three decades, this book is designed to broaden the training of physicists. Its six main topical sections are also designed so they can be used in separate courses, and the book provides an invaluable reference for researchers. Presents all the major fields of classical physics except three prerequisites: classical mechanics, electromagnetism, and elementary thermodynamics Elucidates the interconnections between diverse fields and explains their shared concepts and tools Focuses on fundamental concepts and modern, real-world applications Takes applications from fundamental, experimental, and applied physics; astrophysics and cosmology; geophysics, oceanography, and meteorology; biophysics and chemical physics; engineering and optical science and technology; and

information science and technology Emphasizes the quantum roots of classical physics and how to use quantum techniques to elucidate classical concepts or simplify classical calculations Features hundreds of color figures, some five hundred exercises, extensive cross-references, and a detailed index An online illustration package is available

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### **A FIRST COURSE IN TURBULENCE**

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MIT Press This is the first book specifically designed to offer the student a smooth transitional course between elementary fluid dynamics (which gives only last-minute attention to turbulence) and the professional literature on turbulent flow, where an advanced viewpoint is assumed. The subject of turbulence, the most forbidding in fluid dynamics, has usually proved treacherous to the beginner, caught in the whirls and eddies of its nonlinearities and statistical imponderables. This is the first book specifically designed to offer the student a smooth transitional course between elementary fluid dynamics (which gives only last-minute attention to turbulence) and the professional literature on turbulent flow, where an advanced viewpoint is assumed. Moreover, the text has been developed for students, engineers, and scientists with different technical backgrounds and interests. Almost all flows, natural and man-made, are turbulent. Thus the subject is the concern of geophysical and environmental scientists (in dealing with atmospheric jet streams, ocean currents, and the flow of rivers, for example), of astrophysicists (in studying the photospheres of the sun and stars or mapping gaseous nebulae), and of engineers (in calculating pipe flows, jets, or wakes). Many such examples are discussed in the book. The approach taken avoids the difficulties of advanced mathematical development on the one side and the morass of experimental detail and empirical data on the other. As a result of following its midstream course, the text gives the student a physical understanding of the subject and deepens his intuitive insight into those problems that cannot now be rigorously solved. In particular, dimensional analysis is used extensively in dealing with those problems whose exact solution is mathematically elusive. Dimensional reasoning, scale arguments, and similarity rules are introduced at the beginning and are applied throughout. A discussion of Reynolds stress and the kinetic theory of gases provides the contrast needed to put mixing-length theory into proper perspective: the authors present a thorough comparison between the mixing-length models and dimensional analysis of shear flows. This is followed by an extensive treatment of vorticity dynamics, including vortex stretching and vorticity budgets. Two chapters are devoted to boundary-free shear flows and well-bounded turbulent shear flows. The examples presented include wakes, jets, shear layers, thermal plumes, atmospheric boundary layers, pipe and channel flow, and boundary layers in pressure gradients. The spatial structure of turbulent flow has been the subject of analysis in the book up to this point, at which a compact but thorough introduction to statistical methods is given. This prepares the reader to understand the stochastic and spectral structure of turbulence. The remainder of the book consists of applications of the statistical approach to the study of turbulent transport (including diffusion and mixing) and turbulent spectra.

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### **NON-EQUILIBRIUM THERMODYNAMICS IN MULTIPHASE FLOWS**

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Springer Science & Business Media Non-equilibrium thermodynamics is a general framework that allows the macroscopic description of irreversible processes. This book introduces non-equilibrium thermodynamics and its applications to the rheology of multiphase flows. The subject is relevant to graduate students in chemical and mechanical engineering, physics and material science. This book is divided into two parts. The first part presents the theory of non-equilibrium thermodynamics, reviewing its essential features and showing, when possible, some applications. The second part of this book deals with how the general theory can be applied to model multiphase flows and, in particular, how to determine their constitutive relations. Each chapter contains problems at the end, the solutions of which are given at the end of the book. No prior knowledge of statistical mechanics is required; the necessary prerequisites are elements of transport phenomena and on thermodynamics. "The style of the book is mathematical, but nonetheless it remains very readable and anchored in the physical world rather than becoming too abstract. Though it is up-to-date and includes recent important developments, there is a lot of classical material in the book, albeit presented with unprecedented clarity and coherence. The first six chapters are actually a very good introduction to the theory underlying many phenomena in soft matter physics, beyond the focus on flow and transport of the later chapters of the book." Prof Richard A.L. Jones FRS, Pro-Vice-Chancellor for Research and Innovation, University of Sheffield

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### **WAVELET NUMERICAL METHOD AND ITS APPLICATIONS IN NONLINEAR PROBLEMS**

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Springer Nature This book summarizes the basic theory of wavelets and some related algorithms in an easy-to-understand language from the perspective of an engineer rather than a mathematician. In this book, the wavelet solution schemes are systematically established and introduced for solving general linear and nonlinear initial boundary value problems in engineering, including the technique of boundary extension in approximating interval-bounded functions, the calculation method for various connection coefficients, the single-point Gaussian integration method in calculating the coefficients of wavelet expansions and unique treatments on nonlinear terms in differential equations. At the same time, this book is

supplemented by a large number of numerical examples to specifically explain procedures and characteristics of the method, as well as detailed treatments for specific problems. Different from most of the current monographs focusing on the basic theory of wavelets, it focuses on the use of wavelet-based numerical methods developed by the author over the years. Even for the necessary basic theory of wavelet in engineering applications, this book is based on the author's own understanding in plain language, instead of a relatively difficult professional mathematical description. This book is very suitable for students, researchers and technical personnel who only want to need the minimal knowledge of wavelet method to solve specific problems in engineering.

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### **APPLIED FLUID MECHANICS**

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Intended for undergraduate-level courses in Fluid Mechanics or Hydraulics in Mechanical, Chemical, and Civil Engineering Technology and Engineering programs. This text covers various basic principles of fluid mechanics - both statics and dynamics.

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### **MUNSON, YOUNG AND OKIISHI'S FUNDAMENTALS OF FLUID MECHANICS**

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[John Wiley & Sons](#) Original edition: Munson, Young, and Okiishi in 1990.

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### **BOUNDARY AND INTERIOR LAYERS, COMPUTATIONAL AND ASYMPTOTIC METHODS BAIL 2016**

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[Springer](#) This volume collects papers associated with lectures that were presented at the BAIL 2016 conference, which was held from 14 to 19 August 2016 at Beijing Computational Science Research Center and Tsinghua University in Beijing, China. It showcases the variety and quality of current research into numerical and asymptotic methods for theoretical and practical problems whose solutions involve layer phenomena. The BAIL (Boundary And Interior Layers) conferences, held usually in even-numbered years, bring together mathematicians and engineers/physicists whose research involves layer phenomena, with the aim of promoting interaction between these often-separate disciplines. These layers appear as solutions of singularly perturbed differential equations of various types, and are common in physical problems, most notably in fluid dynamics. This book is of interest for current researchers from mathematics, engineering and physics whose work involves the accurate approximation of solutions of singularly perturbed differential equations; that is, problems whose solutions exhibit boundary and/or interior layers.

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### **FOUNDATIONS OF FLUID MECHANICS**

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### **ADVANCED TRANSPORT PHENOMENA**

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### **ANALYSIS, MODELING, AND COMPUTATIONS**

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[Cambridge University Press](#) Integrated, modern approach to transport phenomena for graduate students, featuring examples and computational solutions to develop practical problem-solving skills.

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### **PRINCIPLES OF TURBOMACHINERY**

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[Springer Science & Business Media](#) This text outlines the fluid and thermodynamic principles that apply to all classes of turbomachines, and the material has been presented in a unified way. The approach has been used with successive groups of final year mechanical engineering students, who have helped with the development of the ideas outlined. As with these students, the reader is assumed to have a basic understanding of fluid mechanics and thermodynamics. However, the early chapters combine the relevant material with some new concepts, and provide basic reading references. Two related objectives have defined the scope of the treatment. The first is to provide a general treatment of the common forms of turbo machine, covering basic fluid dynamics and thermodynamics of flow through passages and over surfaces, with a brief derivation of the fundamental governing equations. The second objective is to apply this material to the various machines in enough detail to allow the major design and performance factors to be appreciated. Both objectives have been met by grouping the machines by flow path rather than by application, thus allowing an appreciation of points of similarity or difference in approach. No attempt has been made to cover detailed points of design or stressing, though the cited references and the body of information from which they have been taken give this sort of information. The first four chapters introduce the fundamental relations, and the succeeding chapters deal with applications to the various flow paths.

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## FIELD AND WAVE ELECTROMAGNETICS

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Pearson Education India

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## ATMOSPHERIC AND OCEANIC FLUID DYNAMICS

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### FUNDAMENTALS AND LARGE-SCALE CIRCULATION

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Cambridge University Press Fluid dynamics is fundamental to our understanding of the atmosphere and oceans. Although many of the same principles of fluid dynamics apply to both the atmosphere and oceans, textbooks tend to concentrate on the atmosphere, the ocean, or the theory of geophysical fluid dynamics (GFD). This textbook provides a comprehensive unified treatment of atmospheric and oceanic fluid dynamics. The book introduces the fundamentals of geophysical fluid dynamics, including rotation and stratification, vorticity and potential vorticity, and scaling and approximations. It discusses baroclinic and barotropic instabilities, wave-mean flow interactions and turbulence, and the general circulation of the atmosphere and ocean. Student problems and exercises are included at the end of each chapter. Atmospheric and Oceanic Fluid Dynamics: Fundamentals and Large-Scale Circulation will be an invaluable graduate textbook on advanced courses in GFD, meteorology, atmospheric science and oceanography, and an excellent review volume for researchers. Additional resources are available at [www.cambridge.org/9780521849692](http://www.cambridge.org/9780521849692).

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## HEAT CONDUCTION

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John Wiley & Sons The long-awaited revision of the bestseller on heat conduction Heat Conduction, Third Edition is an update of the classic text on heat conduction, replacing some of the coverage of numerical methods with content on micro- and nanoscale heat transfer. With an emphasis on the mathematics and underlying physics, this new edition has considerable depth and analytical rigor, providing a systematic framework for each solution scheme with attention to boundary conditions and energy conservation. Chapter coverage includes: Heat conduction fundamentals Orthogonal functions, boundary value problems, and the Fourier Series The separation of variables in the rectangular coordinate system The separation of variables in the cylindrical coordinate system The separation of variables in the spherical coordinate system Solution of the heat equation for semi-infinite and infinite domains The use of Duhamel's theorem The use of Green's function for solution of heat conduction The use of the Laplace transform One-dimensional composite medium Moving heat source problems Phase-change problems Approximate analytic methods Integral-transform technique Heat conduction in anisotropic solids Introduction to microscale heat conduction In addition, new capstone examples are included in this edition and extensive problems, cases, and examples have been thoroughly updated. A solutions manual is also available. Heat Conduction is appropriate reading for students in mainstream courses of conduction heat transfer, students in mechanical engineering, and engineers in research and design functions throughout industry.

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## CONTEMPORARY ENGINEERING ECONOMICS, GLOBAL EDITION

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Pearson Higher Ed For courses in engineering and economics Comprehensively blends engineering concepts with economic theory Contemporary Engineering Economics teaches engineers how to make smart financial decisions in an effort to create economical products. As design and manufacturing become an integral part of engineers' work, they are required to make more and more decisions regarding money. The 6th Edition helps students think like the 21st century engineer who is able to incorporate elements of science, engineering, design, and economics into his or her products. This text comprehensively integrates economic theory with principles of engineering, helping students build sound skills in financial project analysis. The full text downloaded to your computer With eBooks you can: search for key concepts, words and phrases make highlights and notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf (available as a free download), available online and also via the iPad and Android apps. Upon purchase, you'll gain instant access to this eBook. Time limit The eBooks products do not have an expiry date. You will continue to access your digital ebook products whilst you have your Bookshelf installed.

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## GAS TURBINES

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## INTERNAL FLOW SYSTEMS MODELING

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Cambridge University Press This physics-first, design-oriented textbook explains concepts of gas turbine secondary flows, reduced-order modeling methods, and 3-D CFD.

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## **ADVANCED THERMODYNAMICS ENGINEERING, SECOND EDITION**

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[CRC Press](#) **Advanced Thermodynamics Engineering, Second Edition** is designed for readers who need to understand and apply the engineering physics of thermodynamic concepts. It employs a self-teaching format that reinforces presentation of critical concepts, mathematical relationships, and equations with concrete physical examples and explanations of applications—to help readers apply principles to their own real-world problems. **Less Mathematical/Theoretical Derivations—More Focus on Practical Application** Because both students and professionals must grasp theory almost immediately in this ever-changing electronic era, this book—now completely in decimal outline format—uses a phenomenological approach to problems, making advanced concepts easier to understand. After a decade teaching advanced thermodynamics, the authors infuse their own style and tailor content based on their observations as professional engineers, as well as feedback from their students. Condensing more esoteric material to focus on practical uses for this continuously evolving area of science, this book is filled with revised problems and extensive tables on thermodynamic properties and other useful information. The authors include an abundance of examples, figures, and illustrations to clarify presented ideas, and additional material and software tools are available for download. The result is a powerful, practical instructional tool that gives readers a strong conceptual foundation on which to build a solid, functional understanding of thermodynamics engineering.

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## **BOUNDARY-LAYER THEORY**

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[Springer](#) This new edition of the near-legendary textbook by Schlichting and revised by Gersten presents a comprehensive overview of boundary-layer theory and its application to all areas of fluid mechanics, with particular emphasis on the flow past bodies (e.g. aircraft aerodynamics). The new edition features an updated reference list and over 100 additional changes throughout the book, reflecting the latest advances on the subject.

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## **BIOLOGY**

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### **SCIENCE FOR LIFE, WITH PHYSIOLOGY**

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[Benjamin-Cummings Publishing Company](#) **Coleen Belk and Virginia Borden Maier** have helped students demystify biology for nearly twenty years in the classroom and nearly ten years with their book, **Biology: Science for Life with Physiology**. In the new Fourth Edition, they continue to use stories and current issues, such as discussion of cancer to teach cell division, to connect biology to student's lives. Learning Outcomes are new to this edition and integrated within the book to help professors guide students' reading and to help students assess their understanding of biology. A new Chapter 3, "Is It Possible to Supplement Your Way to Better Health? Nutrients and Membrane Transport," offers an engaging storyline and focused coverage on micro- and macro-nutrients, antioxidants, passive and active transport, and exocytosis and endocytosis. This package contains: **Biology: Science for Life with Physiology, Fourth Edition**

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## **PROJECT MANAGEMENT IN PRACTICE**

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[John Wiley & Sons](#) **Project Management in Practice, 4th Edition** focuses on the technical aspects of project management that are directly related to practice.

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## **FUNDAMENTAL MECHANICS OF FLUIDS, THIRD EDITION**

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[CRC Press](#) 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

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## **PROBABILITY CONCEPTS IN ENGINEERING: EMPHASIS ON APPLICATIONS TO CIVIL AND ENVIRONMENTAL ENGINEERING, 2E INSTRUCTOR SITE**

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[John Wiley & Sons Incorporated](#) Apply the principles of probability and statistics to realistic engineering problems The easiest and most effective way to learn the principles of

probabilistic modeling and statistical inference is to apply those principles to a variety of applications. That's why Ang and Tang's Second Edition of *Probability Concepts in Engineering* (previously titled *Probability Concepts in Engineering Planning and Design*) explains concepts and methods using a wide range of problems related to engineering and the physical sciences, particularly civil and environmental engineering. Now extensively revised with new illustrative problems and new and expanded topics, this Second Edition will help you develop a thorough understanding of probability and statistics and the ability to formulate and solve real-world problems in engineering. The authors present each basic principle using different examples, and give you the opportunity to enhance your understanding with practice problems. The text is ideally suited for students, as well as those wishing to learn and apply the principles and tools of statistics and probability through self-study. Key Features in this 2nd Edition: A new chapter (Chapter 5) covers Computer-Based Numerical and Simulation Methods in Probability, to extend and expand the analytical methods to more complex engineering problems. New and expanded coverage includes distribution of extreme values (Chapter 3), the Anderson-Darling method for goodness-of-fit test (Chapter 6), hypothesis testing (Chapter 6), the determination of confidence intervals in linear regression (Chapter 8), and Bayesian regression and correlation analyses (Chapter 9). Many new exercise problems in each chapter help you develop a working knowledge of concepts and methods. Provides a wide variety of examples, including many new to this edition, to help you learn and understand specific concepts. Illustrates the formulation and solution of engineering-type probabilistic problems through computer-based methods, including developing computer codes using commercial software such as MATLAB and MATHCAD. Introduces and develops analytical probabilistic models and shows how to formulate engineering problems under uncertainty, and provides the fundamentals for quantitative risk assessment.

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### **SIMULATION AND MODELING METHODOLOGIES, TECHNOLOGIES AND APPLICATIONS**

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#### **INTERNATIONAL CONFERENCE, SIMULTECH 2012 ROME, ITALY, JULY 28-31, 2012 REVISED SELECTED PAPERS**

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[Springer Science & Business Media](#) This book includes extended and revised versions of a set of selected papers from the 2012 International Conference on Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH 2012) which was sponsored by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC) and held in Rome, Italy. SIMULTECH 2012 was technically co-sponsored by the Society for Modeling & Simulation International (SCS), GDR I3, Lionphant Simulation, Simulation Team and IFIP and held in cooperation with AIS Special Interest Group of Modeling and Simulation (AIS SIGMAS) and the Movimento Italiano Modellazione e Simulazione (MIMOS).

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### **ESSENTIALS OF CONTEMPORARY MANAGEMENT**

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[McGraw-Hill Companies](#) Jones and George are dedicated to the challenge of "Making It Real" for students. As a team, they are uniquely qualified to write about the organizational challenges facing today's managers. No other author team in the management discipline matches their combined research and text-writing experience. *Essentials of Management* concisely surveys current management theories and research. Through a variety of real world examples from small, medium, and large companies the reader learns how those ideas are used by practicing managers. The organization of this text follows the mainstream functional approach of planning, organizing, leading, and controlling; but the content is flexible and encourages instructors to use the organization they are most comfortable with. The themes of diversity, ethics, and information technology are clearly evident through in-text examples, photographs, "unboxed" stories, and the end-of-chapter material - all areas of importance that truly serve to bring to life the workplace realities that today's student will encounter in the course of a career.

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### **FLOWING MATTER**

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[Springer Nature](#) This open access book, published in the *Soft and Biological Matter* series, presents an introduction to selected research topics in the broad field of flowing matter, including the dynamics of fluids with a complex internal structure -from nematic fluids to soft glasses- as well as active matter and turbulent phenomena. Flowing matter is a subject at the crossroads between physics, mathematics, chemistry, engineering, biology and earth sciences, and relies on a multidisciplinary approach to describe the emergence of the macroscopic behaviours in a system from the coordinated dynamics of its microscopic constituents. Depending on the microscopic interactions, an assembly of molecules or of mesoscopic particles can flow like a simple Newtonian fluid, deform elastically like a solid or behave in a complex manner. When the internal constituents are active, as for biological entities, one generally observes complex large-scale collective motions. Phenomenology is further complicated by the invariable tendency of fluids to display chaos at the large scales or when stirred strongly enough. This volume presents several research topics that address these phenomena encompassing the traditional micro-, meso-, and macro-scales descriptions, and contributes to our understanding of the fundamentals of flowing matter. This book is the legacy of the COST Action MP1305 "Flowing Matter".

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**HYDRAULICS, FLUID MECHANICS AND HYDRAULIC MACHINES**

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S. Chand Publishing The favourable and warm reception, which the previous editions and reprints of this popular book has enjoyed all over India and abroad has been a matter of great satisfaction for me.

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**WAVES IN THE OCEAN AND ATMOSPHERE**

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**INTRODUCTION TO WAVE DYNAMICS**

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Springer Science & Business Media **A study of the fundamental theory of waves appropriate for first year graduate students in oceanography, meteorology and associated sciences. Starting with an elementary overview of the basic wave concept, specific wave phenomena are then examined, including: surface gravity waves, internal gravity waves, lee waves, waves in the presence of rotation, and geostrophic adjustment. Each wave topic is used to introduce either a new technique or concept in general wave theory. Emphasis is placed on connectivity between the various subjects and on the physical interpretation of the mathematical results. The book contains numerous exercises at the end of the respective chapters.**