

Fundamentals Of Engineering Thermodynamics By E Rathakrishnan

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Encyclopedia of Fluid Mechanics

- Ethirajan Rathakrishnan

2022-12-16

This book was developed using material from teaching courses on fluid mechanics, high-speed

flows, aerodynamics, high-

enthalpy flows, experimental

methods, aircraft design, heat

transfer, introduction to

engineering, and wind

engineering. It precisely presents

the theoretical and application aspects of the terms associated with these courses. It explains concepts such as cyclone, typhoon, hurricane, and tornado, by highlighting the subtle difference between them. The text comprehensively introduces the subject vocabulary of fluid mechanics for use in courses in engineering and the physical sciences. This book • Presents the theoretical aspects and applications of high-speed flows, aerodynamics, high-enthalpy flows, and aircraft design. • Provides a ready reference source for readers to learn essential concepts related to flow physics, rarefied, and stratified flows. • Comprehensively covers topics such as laser Doppler anemometer, latent heat of fusion, and latent heat of vaporisation. • Includes schematic sketches and photographic images to equip the reader with a better view of the concepts. This is ideal study material for senior

undergraduate and graduate students in the fields of mechanical engineering, aerospace engineering, flow physics, civil engineering, automotive engineering, and manufacturing engineering.

Gas Dynamics - Ethirajan Rathakrishnan 2010

Books In Print 2004-2005 - Bowker Editorial Staff 2004

REFRIGERATION AND AIR CONDITIONING - S. N. SAPALI 2013-11-13

This book is designed for a first course in Refrigeration and Air Conditioning. The subject matter has been developed in a logical and coherent manner with neat illustrations and a fairly large number of solved examples and unsolved problems. The text, developed from the author's teaching experience of many years, is suitable for the senior-level undergraduate and first-year postgraduate students of

mechanical engineering, automobile engineering as well as chemical engineering. The text commences with an introduction to the fundamentals of thermo-dynamics and a brief treatment of the various methods of refrigeration. Then follows the detailed discussion and analysis of air refrigeration systems, vapour compression and vapour absorption refrigeration systems with special emphasis on developing sound physical concepts and gaining problem solving skills. Refrigerants are exhaustively dealt with in a separate chapter. The remainder chapters of the book deal with psychrometry and various processes required for the analysis of air conditioning systems. Technical descriptions of compressors, evaporators, condensers, expansion devices and ducts are provided along with design practices for cooling and heating load calculations. The basic principles of cryogenic

systems and applications of cryogenic gases and air liquefaction systems have also been dealt with. The Second Edition incorporates: (a) New sections on vortex tube, solar refrigeration and magnetic refrigeration, in Chapter 2. (b) Additional solved examples on vapour compression refrigeration system using the R134a refrigerant, in Chapter 4. (c) New sections on duct arrangement systems and air distribution systems, in Chapter 15. (d) A new Chapter 17 on Food Preservation.

Thermodynamics of Phase Equilibria in Food Engineering -

Camila G. Pereira 2018-10-26

Thermodynamics of Phase Equilibria in Food Engineering is the definitive book on thermodynamics of equilibrium applied to food engineering. Food is a complex matrix consisting of different groups of compounds divided into macronutrients (lipids, carbohydrates, and

proteins), and micronutrients (vitamins, minerals, and phytochemicals). The quality characteristics of food products associated with the sensorial, physical and microbiological attributes are directly related to the thermodynamic properties of specific compounds and complexes that are formed during processing or by the action of diverse interventions, such as the environment, biochemical reactions, and others. In addition, in obtaining bioactive substances using separation processes, the knowledge of phase equilibria of food systems is essential to provide an efficient separation, with a low cost in the process and high selectivity in the recovery of the desired component. This book combines theory and application of phase equilibria data of systems containing food compounds to help food engineers and researchers to solve complex problems found in food

processing. It provides support to researchers from academia and industry to better understand the behavior of food materials in the face of processing effects, and to develop ways to improve the quality of the food products.

Fundamentals of Engineering Thermodynamics - E.

Rathakrishnan 2004-10-01

Clean Coal Technology and Sustainable Development -

Guangxi Yue 2016-07-30

This book gathers the proceedings of the 8th International Symposium on Coal Combustion. The contributions reflect the latest research on coal quality and combustion, techniques for pulverized coal combustion and fluidized bed combustion, special issues regarding CO₂ capture (CCS), industrial applications, etc. – aspects that are of great importance in promoting academic communications between related areas and the

technical development of coal-related fields. The International Symposium on Coal Combustion (ISCC), sponsored and organized by Tsinghua University since 1987, has established itself as an important platform allowing scientists and engineers to exchange information and ideas on the science and technology of coal combustion and related issues, and to forge new partnerships in the growing Chinese market. Researchers in the fields of clean coal combustion, carbon dioxide capture and storage, coal chemical engineering, energy engineering, etc. will greatly benefit from this book. Guangxi Yue, professor of the Department of Thermal Engineering in Tsinghua University, Beijing, China, and a member of Chinese Academy of Engineering(CAE). Shuiqing Li, professor of the Department of Thermal Engineering in Tsinghua University, Beijing, China.

Fox and McDonald's Introduction to Fluid Mechanics - Robert W. Fox 2020-06-30

Through ten editions, Fox and McDonald's Introduction to Fluid Mechanics has helped students understand the physical concepts, basic principles, and analysis methods of fluid mechanics. This market-leading textbook provides a balanced, systematic approach to mastering critical concepts with the proven Fox-McDonald solution methodology. In-depth yet accessible chapters present governing equations, clearly state assumptions, and relate mathematical results to corresponding physical behavior. Emphasis is placed on the use of control volumes to support a practical, theoretically-inclusive problem-solving approach to the subject. Each comprehensive chapter includes numerous, easy-to-follow examples that illustrate good solution technique and explain challenging points. A broad range of carefully selected

topics describe how to apply the governing equations to various problems, and explain physical concepts to enable students to model real-world fluid flow situations. Topics include flow measurement, dimensional analysis and similitude, flow in pipes, ducts, and open channels, fluid machinery, and more. To enhance student learning, the book incorporates numerous pedagogical features including chapter summaries and learning objectives, end-of-chapter problems, useful equations, and design and open-ended problems that encourage students to apply fluid mechanics principles to the design of devices and systems.

Fundamentals of Aerospace Engineering - Manuel Soler 2014

This "is a textbook that provides an introductory, thorough overview of aeronautical engineering, and it is aimed at serving as reference for an undergraduate course on aerospace engineering. The book

is divided into three parts, namely: Introduction (The Scope, Generalities), The Aircraft (Aerodynamics, materials and Structures, Propulsion, Instruments and Systems, Flight Mechanics), and Air Transportation, Airports, and Air Navigation."--

FUNDAMENTALS OF ENGINEERING

THERMODYNAMICS - E.

RATHAKRISHNAN 2005-01-01

Updated and enhanced with numerous worked-out examples and exercises, this Second Edition continues to present a thorough, concise and accurate discussion of fundamentals and principles of thermodynamics. It focuses on practical applications of theory and equips students with sound techniques for solving engineering problems. The treatment of the subject matter emphasizes the phenomena which are associated with the various thermodynamic processes. The topics covered are

supported by an extensive set of example problems to enhance the student's understanding of the concepts introduced. The end-of-chapter problems serve to aid the learning process, and extend the material covered in the text by including problems characteristic of engineering design. The book is designed to serve as a text for undergraduate engineering students for a course in thermodynamics.

Instrumentation, Measurements, and Experiments in Fluids -

Ethirajan Rathakrishnan

2016-12-19

Mechanical engineers involved with flow mechanics have long needed an authoritative reference that delves into all the essentials required for experimentation in fluids, a resource that can provide fundamental review, as well as the details necessary for experimentation on everything from household appliances to hi-tech rockets. Instrumentation,

Measurements, and Experiments in Fluids meets this challenge, as its author is not only a highly respected pioneer in fluids, but also possesses twenty years experience teaching students of all levels. He clearly explains fundamental principles as well the tools and methods essential for advanced experimentation. Reflecting an awe for flow mechanics, along with a deep-rooted knowledge, the author has assembled a fourteen chapter volume that is destined to become a seminal work in the field. Providing ample detail for self study and the sort of elegant writing rarely found in so thorough a treatment, he provides insight into all the vital topics and issues associated with the devices and instruments used for fluid mechanics and gas dynamics experiments. Extremely organized, this work presents easy access to the principles behind the science and goes on to elucidate the current

research and findings needed by those seeking to make further advancement. Unique and Thorough Coverage of Uncertainty Analysis The author provides valuable insight into the vital issues associated with the devices used in fluid mechanics and gas dynamics experiments. Leaving nothing to doubt, he tackles the most difficult concepts and ends the book with an introduction to uncertainty analysis. Structured and detailed enough for self study, this volume also provides the backbone for both undergraduate and graduate courses on fluids experimentation.

Thermal Engineering Volume 1

- Shiv Kumar 2022-02-05

This highly informative and carefully presented book offers a comprehensive overview of the fundamentals of thermal engineering. The book focuses both on the fundamentals and more complex topics such as the basics of thermodynamics, Zeroth

Law of thermodynamics, first law of thermodynamics, application of first law of thermodynamics, second law of thermodynamics, entropy, availability and irreversibility, properties of pure substance, vapor power cycles, introduction to working of IC engines, air-standard cycles, gas turbines and jet propulsion, thermodynamic property relations and combustion. The author has included end-of-chapter problems and worked examples to augment learning and self-testing. This book is a useful reference to undergraduate students in the area of mechanical engineering.

Basic And Applied

Thermodynamics - P. K. NAG
2009

Thermal Engineering Volume 2

- Shiv Kumar 2022-02-05

This highly informative and carefully presented book offers a comprehensive overview of the

fundamentals of thermal engineering. The book focuses both on the fundamentals and more complex topics such as the basics of thermodynamics, Zeroth Law of thermodynamics, first law of thermodynamics, application of first law of thermodynamics, second law of thermodynamics, entropy, availability and irreversibility, properties of pure substance, vapor power cycles, introduction to working of IC engines, air-standard cycles, gas turbines and jet propulsion, thermodynamic property relations and combustion. The author has included end-of-chapter problems and worked examples to augment learning and self-testing. This book is a useful reference to undergraduate students in the area of mechanical engineering.

Thermodynamics and Heat Power, Ninth Edition - Irving Granet 2020-11-06

The ninth edition of

Thermodynamics and Heat Power contains a revised sequence of thermodynamics concepts including physical properties, processes, and energy systems, to enable the attainment of learning outcomes by Engineering and Engineering Technology students taking an introductory course in thermodynamics. Built around an easily understandable approach, this updated text focuses on thermodynamics fundamentals, and explores renewable energy generation, IC engines, power plants, HVAC, and applied heat transfer. Energy, heat, and work are examined in relation to thermodynamics cycles, and the effects of fluid properties on system performance are explained. Numerous step-by-step examples and problems make this text ideal for undergraduate students. This new edition: Introduces physics-based mathematical formulations and examples in a way that

enables problem-solving. Contains extensive learning features within each chapter, and basic computational exercises for in-class and laboratory activities. Includes a straightforward review of applicable calculus concepts. Uses everyday examples to foster a better understanding of thermal science and engineering concepts. This book is suitable for undergraduate students in engineering and engineering technology.

FLUID MECHANICS -

RATHAKRISHNAN

RATHAKRISHNAN 2012-05-18

The third edition of this easy-to-understand text continues to provide students with a sound understanding of the fundamental concepts of various physical phenomena of science of fluid mechanics. It adds a new chapter (Vortex Theory) which presents a vivid interpretation of vortex motions that are of fundamental importance in aerodynamics and in the

performance of many other engineering devices. It elaborately explains the dynamics of vortex motion with the help of Helmholtz's theorems and provides illustrations of how the manifestations of Helmholtz's theorems can be observed in daily life. Several new problems along with answers are added at the end of Chapter 4 on Boundary Layer. The book is suitable for a one-semester course in fluid mechanics for undergraduate students of mechanical, aerospace, civil and chemical engineering students. A Solutions Manual containing solutions to end-of-chapter problems is available for use by instructors.

Fundamentals of Gas Dynamics -

Robert D. Zucker 2002-10-15

Provides all necessary equations, tables, and charts as well as self tests. Included chapters cover reaction propulsion systems and real gas effects. Written and organized in a manner that

makes it accessible for self learning.

Problems and Solutions on Thermodynamics and Statistical Mechanics - Yung-kuo Lim 1990 Volume 5.

Thermodynamics - William C. Reynolds 2018-09-20
Provides an essential treatment of the subject and rigorous methods to solve all kinds of energy engineering problems.

Fundamentals of Engineering Thermodynamics - Ethirajan Rathakrishnan 1989

Holistic Healthcare - Anne George 2019-04-26
Here is an insightful compilation of contributions from scientists, healthcare experts, and doctors working actively to bring about wholesome healing to individuals, looking at cuttingedge holistic therapies. It includes chapters that deal with improving the general health of people from various walks of life, to treating some very

challenging diseases. Various schools of treatments, exercise regimes, and meditations are discussed. Specific topics include the use of alternative therapy for human health and healing, including yoga, meditation, acupuncture, prayer, herbs, Ayurvedic treatment, and homoeopathy. The volume showcases some recent trends in treating various diseases that plague mankind, including superbugs, drug sideeffects, drug abuse, and myriad lifestyle-related diseases and syndromes.

Engineering Thermodynamics - R. K. Rajput 2010
Mechanical Engineering
Fluid Mechanics - Ethirajan Rathakrishnan 2022-05-30

FLUID MECHANICS, FOURTH EDITION -

RATHAKRISHNAN, E.
2022-03-30

The Fourth Edition of this easy-to-understand text continues to provide students with a sound

understanding of the fundamental concepts of various physical phenomena of science of fluid mechanics. The third edition of this book, developed to serve as text for a course in fluid mechanics at the introductory level for undergraduate course and for an advanced level course at graduate level, was well received all over the world, because of its completeness and proper balance of theoretical and application aspects of this science. Over the years, the feedback received from the faculty and students made the author to realize the need for adding following material to serve as text for students of all branches of engineering. • Three new chapters on: o Pipe Flows o Flow with Free Surface o Hydraulics Machinery • Large number of solved examples in all the chapters to enable the user to gain an insight in to the theory and application aspects of the concepts introduced. • A Solution

Manual that contains solutions to all the end-of-chapter problems for instructors. TARGET AUDIENCE • B.Tech (All Branches)

Fundamentals of

Thermodynamics - Claus Borgnakke 2013-06-27

Now in a new edition, this book continues to set the standard for teaching readers how to be effective problem solvers, emphasizing the authors's signature methodologies that have taught over a half million students worldwide. This new edition provides a student-friendly approach that emphasizes the relevance of thermodynamics principles to some of the most critical issues of today and coming decades, including a wealth of integrated coverage of energy and the environment, biomedical/bioengineering, as well as emerging technologies. Visualization skills are developed and basic principles demonstrated

through a complete set of animations that have been interwoven throughout.

Applied Gas Dynamics -

Ethirajan Rathakrishnan

2019-02-25

A revised edition to applied gas dynamics with exclusive coverage on jets and additional sets of problems and examples

The revised and updated second edition of Applied Gas Dynamics offers an authoritative guide to the science of gas dynamics.

Written by a noted expert on the topic, the text contains a comprehensive review of the topic; from a definition of the subject, to the three essential processes of this science: the isentropic process, shock and expansion process, and Fanno and Rayleigh flows. In this revised edition, there are additional worked examples that highlight many concepts, including moving shocks, and a section on critical Mach number is included that helps to illuminate the

concept. The second edition also contains new exercise problems with the answers added. In addition, the information on ram jets is expanded with helpful worked examples. It explores the entire spectrum of the ram jet theory and includes a set of exercise problems to aid in the understanding of the theory presented. This important text: Includes a wealth of new solved examples that describe the features involved in the design of gas dynamic devices Contains a chapter on jets; this is the first textbook material available on high-speed jets Offers comprehensive and simultaneous coverage of both the theory and application Includes additional information designed to help with an understanding of the material covered Written for graduate students and advanced undergraduates in aerospace engineering and mechanical engineering, Applied Gas Dynamics, Second Edition

expands on the original edition to include not only the basic information on the science of gas dynamics but also contains information on high-speed jets.

Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics - John R. Howell 1987

Elements of Heat Transfer - Ethirajan Rathakrishnan 2012-03-05

Written for chemical, mechanical, and aerospace engineering students taking courses on heat and mass transfer, this textbook presents the basics and proceeds to the required theory and its application aspects. Major topics covered include conduction, convection, radiation, boiling, heat exchangers, and mass transfer and are explained in a detailed, to-the-point manner. Along with coverage of the topics, the author provides appropriate numerical examples to clarify theory and concepts.

Exercise problems are presented at the end of each chapter to test the understanding gained within each subject. A solutions manual and PowerPoint slides accompany the text, upon qualification.

Thermodynamics and Heat Power - Irving Granet 2014-11-10

Building on the last edition, (dedicated to exploring alternatives to coal- and oil-based energy conversion methods and published more than ten years ago), Thermodynamics and Heat Power, Eighth Edition updates the status of existing direct energy conversion methods as described in the previous work. Offering a systems approach to the analysis of energy conversion methods, this text focuses on the fundamentals involved in thermodynamics, and further explores concepts in the areas of ideal gas flow, engine analysis, air conditioning, and heat transfer. It examines energy, heat, and work

in relation to thermodynamics, and also explores the properties of temperature and pressures. The book emphasizes practical mechanical systems, and incorporates problems at the end of the chapters to advance the application of the material.

What's New in the Eighth Edition: An emphasis on a systems approach to problems
More discussion of the types of heat and of entropy
Added explanations for understanding pound mass and the mole
Analysis of steady flow gas processes, replacing the compressible flow section
The concept of paddle work to illustrate how frictional effects can be analyzed
A clearer discussion of the psychrometric chart and its usage in analyzing air conditioning systems
Updates of the status of direct energy conversion systems
A description of how the cooling tower is utilized in high-rise buildings
Practical automotive engine

analysis
Expanded Brayton cycle analysis including intercooling, reheat, and regeneration and their effect on gas turbine efficiency
A description of fins and how they improve heat transfer rates
Added illustrative problems and new homework problems
Availability of a publisher's website for fluid properties and other reference materials
Properties of the latest in commercial refrigerants
This text presents an understanding of basic concepts on the subject of thermodynamics and is a definitive resource for undergraduate students in engineering programs, most specifically, students studying engineering technology.

Gas Dynamics - Ethirajan Rathakrishnan 2020-11-30

Fluid and Thermal Dynamics Answer Bank for Engineers - Ethirajan Rathakrishnan 2023-03-20

This book provides the essence of

aerodynamics, fluid mechanics, experimental methods, gas dynamics, high enthalpy gas dynamics, helicopter aerodynamics, heat transfer, and thermodynamics, describing the underlying principles of these subjects before listing the set of multiple choice questions of each subject, which will prove to be useful for engineering students to comfortably face and win in the competitive examinations for engineering studies, engineering services, civil services, doctoral Degree program entrance and so on. This book will also be of value for those facing job interviews for academic positions in universities and research organizations or laboratories.

Engineering Thermodynamics - Gordon Frederick Crichton Rogers 1999

Foundation of Mechanical Engineering, 4th Ed. - R.K. Purohit 2011-02-01
Foundation of Mechanical

Engineering is solely written with the view to help B.E. I year students to master the difficult concepts. Needless to emphasise, this new book has been designed as a self learning capsule. With this aim in view, the material has been organised in a logical order and lots of solved problems and line diagrams have been incorporated to enable students to thoroughly master of the subject. It is believed that this book, solely for B.E. I year students of all branches of Engineering, will captivate the attention of senior students as well as teachers.

Gas Tables (Revised) - E. Rathakrishnan 2004-03

Thermodynamics for Engineers, 2nd Edition - Kaufui Vincent Wong 2011-08-05

Aspiring engineers need a text that prepares them to use thermodynamics in professional practice. Thermodynamics instructors need a concise textbook written for a one-

semester undergraduate course—a text that foregoes clutter and unnecessary details but furnishes the essential facts and methods. Thermodynamics for Engineers, Second Edition continues to fill both those needs. Paying special attention to the learning process, the author has developed a unique, practical guide to classical thermodynamics. His approach is remarkably cohesive. For example, he develops the same example through his presentation of the first law and both forms of the second law—entropy and exergy. He also unifies his treatments of the conservation of energy, the creation of entropy, and the destruction of availability by using a balance equation for each, thus emphasizing the commonality between the laws and allowing easier comprehension and use. This Second Edition includes a new chapter on thermodynamic property relations and gives

updated, expanded problem sets in every chapter. Accessible, practical, and cohesive, the text builds a solid foundation for advanced engineering studies and practice. It exposes students to the "big picture" of thermodynamics, and its streamlined presentation allows glimpses into important concepts and methods rarely offered by texts at this level. What's New in This Edition: Updated and expanded problem sets New chapter on thermodynamic property relations Updated chapter on heat transfer Electronic figures available upon qualifying course adoption End-of-chapter poems to summarize engineering principles

INTRODUCTION TO HEAT TRANSFER - S. K. SOM
2008-10-24

This book presents a comprehensive treatment of the essential fundamentals of the topics that should be taught as the first-level course in Heat

Transfer to the students of engineering disciplines. The book is designed to stimulate student learning through clear, concise language. The theoretical content is well balanced with the problem-solving methodology necessary for developing an orderly approach to solving a variety of engineering problems. The book provides adequate mathematical rigour to help students achieve a sound understanding of the physical processes involved. Key Features : A well-balanced coverage between analytical treatments, physical concepts and practical demonstrations. Analytical descriptions of theories pertaining to different modes of heat transfer by the application of conservation equations to control volume and also by the application of conservation equations in differential form like continuity equation, Navier–Stokes equations and energy equation. A short

description of convective heat transfer based on physical understanding and practical applications without going into mathematical analyses (Chapter 5). A comprehensive description of the principles of convective heat transfer based on mathematical foundation of fluid mechanics with generalized analytical treatments (Chapters 6, 7 and 8). A separate chapter describing the basic mechanisms and principles of mass transfer showing the development of mathematical formulations and finding the solution of simple mass transfer problems. A summary at the end of each chapter to highlight key terminologies and concepts and important formulae developed in that chapter. A number of worked-out examples throughout the text, review questions, and exercise problems (with answers) at the end of each chapter. This book is appropriate for a one-semester course in Heat Transfer

for undergraduate engineering students pursuing careers in mechanical, metallurgical, aerospace and chemical disciplines.

Fundamentals of Rocket

Propulsion - DP Mishra

2017-07-20

The book follows a unified approach to present the basic principles of rocket propulsion in concise and lucid form. This textbook comprises of ten chapters ranging from brief introduction and elements of rocket propulsion, aerothermodynamics to solid, liquid and hybrid propellant rocket engines with chapter on electrical propulsion. Worked out examples are also provided at the end of chapter for understanding uncertainty analysis. This book is designed and developed as an introductory text on the fundamental aspects of rocket propulsion for both undergraduate and graduate students. It is also aimed towards

practicing engineers in the field of space engineering. This comprehensive guide also provides adequate problems for audience to understand intricate aspects of rocket propulsion enabling them to design and develop rocket engines for peaceful purposes.

Applied Thermodynamics -

Onkar Singh 2006

This Book Presents A Systematic Account Of The Concepts And Principles Of Engineering Thermodynamics And The Concepts And Practices Of Thermal Engineering. The Book Covers Basic Course Of Engineering Thermodynamics And Also Deals With The Advanced Course Of Thermal Engineering. This Book Will Meet The Requirements Of The Undergraduate Students Of Engineering And Technology Undertaking The Compulsory Course Of Engineering Thermodynamics. The Subject Matter Of Book Is Sufficient For

The Students Of Mechanical Engineering/Industrial-Production Engineering, Aeronautical Engineering, Undertaking Advanced Courses In The Name Of Thermal Engineering/Heat Engineering/ Applied Thermodynamics Etc. Presentation Of The Subject Matter Has Been Made In Very Simple And Understandable Language. The Book Is Written In SI System Of Units And Each Chapter Has Been Provided With Sufficient Number Of Typical Numerical Problems Of Solved And Unsolved Questions With Answers.

High Enthalpy Gas Dynamics -
Ethirajan Rathakrishnan
2015-06-29

This is an introductory level textbook which explains the elements of high temperature and high-speed gas dynamics. written in a clear and easy to follow style, the author covers all the latest developments in the field including basic

thermodynamic principles, compressible flow regimes and waves propagation in one volume covers theoretical modeling of High Enthalpy Flows, with particular focus on problems in internal and external gas-dynamic flows, of interest in the fields of rockets propulsion and hypersonic aerodynamics High enthalpy gas dynamics is a compulsory course for aerospace engineering students and this book is a result of over 25 years' teaching by the author accompanying website includes a Solutions Manual for exercises listed at the end of each chapter, plus lecture slides

GAS DYNAMICS, Seventh Edition - RATHAKRISHNAN,
E. 2020-07-01

This revised and updated seventh edition continues to provide the most accessible and readable approach to the study of all the vital topics and issues associated with gas dynamic processes. At every stage, the

physics governing the process, its applications and limitations are discussed in detail. With a strong emphasis on the basic concepts and problem-solving skills, this text is suitable for a course on Gas Dynamics/Compressible Flows/High-speed Aerodynamics at both undergraduate and postgraduate levels in aerospace engineering, mechanical engineering, chemical engineering and applied physics. The elegant and concise style of the book along with illustrations and worked-out examples makes it eminently suitable for self-study by students and also for scientists and engineers working in the field of gas dynamics in industries and research laboratories. The computer program to calculate the coordinates of contoured nozzle, with the method of characteristics, has been given in C-language. The program listing along with a sample output is given in the Appendix. NEW

TO THE EDITION • A new chapter on the 'Power of Compressible Bernoulli Equation' • Extra chapter-end examples in Chapter 5 • Additional exercise problems in Chapters 5, 6, 7, and 8 KEY FEATURES • Concise coverage of the thermodynamic concepts to serve as a revision of the background material • Introduction to measurements in compressible flows and optical flow visualization techniques • Introduction to rarefied gas dynamics and high-temperature gas dynamics • Solutions Manual for instructors containing the complete worked-out solutions to chapter-end problems • In-depth presentation of potential equations for compressible flows, similarity rule and two-dimensional compressible flows • Logical and systematic treatment of fundamental aspects of gas dynamics, waves in the supersonic regime and gas dynamic processes TARGET AUDIENCE • BE/B.Tech

(Mechanical Engineering,
Aeronautical Engineering) •

ME/M.Tech (Thermal
Engineering, Aeronautical
Engineering)