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Fuel Cells Momentum Press
Thermodynamics: An Engineering Approach McGraw-Hill Education
CRC Press
Thermodynamics, An Engineering Approach, eighth edition, covers the basic principles of thermodynamics while presenting a wealth of real-world engineering examples so students get a feel for how thermodynamics is applied

in engineering practice. This text helps students develop an intuitive understanding by emphasizing the physics and physical arguments. Cengel and Boles explore the various facets of thermodynamics through careful explanations of concepts and use of numerous practical examples and figures, having students develop necessary skills to bridge the gap between knowledge and the confidence to properly apply their knowledge. McGraw-Hill is proud to offer Connect with the eighth edition of Cengel/Boles, Thermodynamics, An Engineering Approach. Connect is the only integrated learning system that empowers students by continuously

adapting to deliver precisely what they need, when they need it, how they need it, so that your class time is more engaging and effective. Problems are graded automatically, and the results are recorded immediately. Track individual student performance - by question, assignment, or in relation to the class overall with detailed grade reports.

Engineering Thermodynamics Springer Aircraft Propulsion and Gas Turbine Engines, Second Edition builds upon the success of the book 's first edition, with the addition of three major topic areas: Piston Engines with integrated propeller coverage; Pump Technologies; and Rocket Propulsion. The rocket propulsion section extends the text 's coverage so that both Aerospace and Aeronautical topics can be studied and compared. Numerous updates have been made to reflect the latest advances in turbine engines, fuels, and combustion. The text is now divided into three parts, the first two devoted to air breathing engines, and the third covering non-air breathing or rocket engines.

Thermodynamics Springer

Refrigeration Systems and Applications, 2nd edition offers a comprehensive treatise that addresses real-life technical and operational problems, enabling the reader to gain an understanding of the fundamental principles and the practical applications of refrigeration technology. New and unique analysis techniques (including exergy as a potential tool), models, correlations, procedures and applications are covered, and recent developments in the field are included - many of which are taken from the author's own research activities in this area. The book also includes some discussion of global warming issues and its potential solutions. Enables the reader to gain an understanding of the fundamental principles and the practical applications of refrigeration technologies. Discusses crucial industrial technical and

operational problems, as well as new performance improvement techniques and tools for better design and analysis. Includes fundamental aspects of thermodynamics, fluid flow, and heat transfer; refrigerants; refrigeration cycles and systems; advanced refrigeration cycles and systems, including some novel applications; heat pumps; heat pipes; and many more. Provides easy to follow explanations, numerous new chapter-end problems and worked-out examples as learning aids for students and instructors. Refrigeration is extensively used in a variety of thermal engineering applications ranging from the cooling of electronic devices to food cooling processes. Its wide-ranging implications and applications mean that this industry plays a key role in national and international economies, and it continues to be an area of active research and development. Refrigeration Systems and Applications, 2nd edition forms a useful reference source for graduate and postgraduate students and researchers in academia and as well as practicing engineers working in this important field who are interested in refrigeration systems and applications and the methods and analysis tools for their analysis, design and performance improvement.

Efficiency and Sustainability in the Energy and Chemical Industries Cambridge University Press

The 4th Edition of Cengel & Boles

Thermodynamics:An Engineering Approach takes thermodynamics education to the next level through its intuitive and innovative approach. A long-time favorite among students and instructors alike because of its highly engaging, student-oriented conversational writing style, this book is now the to most widely adopted thermodynamics text in theU.S. and in the world.

Thermodynamics CRC Press

Because classical thermodynamics evolved into many branches of science and engineering, most undergraduate courses on the subject are taught from the perspective of each area of specialization. General Thermodynamics combines elements from mechanical and chemical engineering, chemistry (including electrochemistry), materials science, and biology to present a unique and thorough treatment of thermodynamics that is broader in scope than other fundamental texts. This book contains classroom-tested materials designed to

meet the academic requirements for students from a variety of scientific and engineering backgrounds in a single course. The first half focuses on classical concepts of thermodynamics, whereas the latter half explores field-specific applications, including a unique chapter on biothermodynamics. The book's methodology is unified, concise, and multidisciplinary, allowing students to understand how the principles of thermodynamics apply to all technical fields that touch upon this most fundamental of scientific theories. It also offers a rigorous approach to the quantitative aspects of thermodynamics, accompanied by clear explanations to help students transition smoothly from the physical concepts to their mathematical representations. Each chapter contains numerous worked examples taken from different engineering applications, illustrations, and an extensive set of exercises to support the material. A complete solutions manual is available to professors with qualifying course adoptions.

Thermodynamics: An Engineering Approach
McGraw-Hill Europe

Accompanying DVD-ROM contains the Limited Academic Version of EES (Engineering Equation Solver) software with scripted solutions to selected text problems.

Thermodynamics in Nuclear Power Plant Systems
John Wiley & Sons

There are many thermodynamics texts on the market, yet most provide a presentation that is at a level too high for those new to the field.

This second edition of Thermodynamics continues to provide an accessible introduction to thermodynamics, which maintains an appropriate rigor to prepare newcomers for subsequent, more advanced topics. The book presents a logical methodology for solving problems in the context of conservation laws and property tables or equations. The authors elucidate the terms around which thermodynamics has historically developed, such as work, heat, temperature, energy, and entropy. Using a pedagogical approach that builds from basic principles to laws and eventually corollaries of the laws, the text enables students to think in clear and correct

thermodynamic terms as well as solve real engineering problems. For those just beginning their studies in the field, Thermodynamics, Second Edition provides the core fundamentals in a rigorous, accurate, and accessible presentation.

Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics
CRC Press
Covers the fundamentals of combined-cycle plants to provide background for understanding the progressive design approaches at the heart of the text
Discusses the types of compact heat exchanger surfaces, suggesting novel designs that can be considered for optimal cost effectiveness and maximum energy production
Undertakes the thermal analysis of these compact heat exchangers throughout the life cycle, from the design perspective through operational and safety assurance stages
This book describes the quest to create novel designs for compact heat exchangers in support of emergent combined cycle nuclear plants. The text opens with a concise explanation of the fundamentals of combined cycles, describing their efficiency impacts on electrical power generation systems. It then covers the implementation of these principles in nuclear reactor power systems, focusing on the role of compact heat exchangers in the combined cycle loop and applying them to the challenges facing actual nuclear power systems. The various types of compact heat exchanger surfaces and designs are given thorough consideration before the author turns his attention to discussing current and projected reactor systems, and how the novel design of these compact heat exchangers can be applied to innovative designs, operation and safety analyses to optimize thermal efficiency. The book is written at an undergraduate level, but will be useful to practicing engineers and scientists as well.

Textbook of Physical Chemistry
CRC Press
Maximizing reader insights into the latest research findings and applications of

Electrically-Assisted Forming (EAF) – whereby metals are formed under an electric current field – this book explains how such a process produces immediate improved formability of metals beyond the extent of thermal softening, and allows metals to be formed to greater elongation with lower mechanical energy as well as allowing for lightweight brittle metals such as magnesium and titanium to be formed without external heating or annealing, enabling the more effective use of these lightweight metals in design. Including case studies that illustrate and support the theoretical content and real-world applications of the techniques discussed, this book also serves to enrich readers understanding of the underlying theories that influence electro-plastic behaviour. The authors have extensive experience in studying Electrically-Assisted Forming and have written extensively with publications including experimental works, technical briefs, conference proceedings, journal articles, and analytical models.

Encyclopedia of Agricultural, Food, and Biological Engineering (Print) Springer

This textbook comprehensively covers the fundamentals and advanced concepts of thermodynamics in a single volume. It provides a detailed discussion of advanced concepts that include energy efficiency, energy sustainability, energy security, organic Rankine cycle, combined cycle power plants, combined cycle power plant integrated with organic Rankine cycle and absorption refrigeration system, integrated coal gasification combined cycle power plants, energy conservation in domestic refrigerators, and next-generation low-global warming potential refrigerants. Pedagogical features include solved problems and unsolved exercises interspersed throughout the text for better understanding. This textbook is primarily written for senior undergraduate students in the fields of mechanical, automobile, chemical, civil, and aerospace engineering for courses on engineering thermodynamics/thermodynamics and for graduate students in thermal engineering and energy engineering for courses on advanced

thermodynamics. It is accompanied by teaching resources, including a solutions manual for instructors. FEATURES Provides design and experimental problems for better understanding Comprehensively discusses power cycles and refrigeration cycles and their advancements Explores the design of energy-efficient buildings to reduce energy consumption Property tables, charts, and multiple-choice questions comprise appendices of the book and are available at <https://www.routledge.com/9780367646288>.

Biomass as a Sustainable Energy Source for the Future CRC Press

Translating fundamental principles of irreversible thermodynamics into day-to-day engineering concepts, this reference provides the tools to accurately measure process efficiency and sustainability in the power and chemical industries-helping engineers to recognize why losses occur and how they can be reduced utilizing familiar thermodynamic princi

Progress in Exergy, Energy, and the Environment McGraw-Hill Education

This book introduces field theory as required in solid and fluid mechanics as well as in electromagnetism. It includes the necessary applied mathematical framework of tensor algebra and tensor calculus, using an inductive approach particularly suited to beginners. It is geared toward undergraduate classes in continuum theory for engineers in general, and more specifically to courses in continuum mechanics. Students will gain a sound basic understanding of the subject as well as the ability to solve engineering problems by applying the general laws of nature in terms of the balances for mass, momentum, and energy in combination with material-specific relations in terms of constitutive equations, thus learning how to use the theory in practice for themselves. This is facilitated by numerous examples and problems provided throughout the text.

Thermodynamics Springer

This book provides a comprehensive basics-to-advanced course in an aero-thermal science vital to the design of engines for either type of craft. The text classifies engines powering aircraft and single/multi-stage rockets, and derives performance parameters for both from basic aerodynamics and thermodynamics laws. Each type of engine is analyzed for optimum performance goals, and mission-appropriate engines selection is explained. Fundamentals of Aircraft and Rocket Propulsion provides information about and analyses of: thermodynamic cycles of shaft engines (piston, turboprop, turboshaft and propfan); jet engines (pulsejet, pulse detonation engine, ramjet, scramjet, turbojet and turbofan); chemical and non-chemical rocket engines; conceptual design of modular rocket engines (combustor, nozzle and turbopumps); and conceptual design of different modules of aero-engines in their design and off-design state. Aimed at graduate and final-year undergraduate students, this textbook provides a thorough grounding in the history and classification of both aircraft and rocket engines, important design features of all the engines detailed, and particular consideration of special aircraft such as unmanned aerial and short/vertical takeoff and landing aircraft. End-of-chapter exercises make this a valuable student resource, and the provision of a downloadable solutions manual will be of further benefit for course instructors. Aircraft Propulsion and Gas Turbine Engines McGraw-Hill Higher Education

NUCLEAR ENGINEERING FUNDAMENTALS is the most modern, up-to-date, and reader friendly nuclear engineering textbook on the market today. It provides a thoroughly modern alternative to classical nuclear engineering textbooks that have not been updated

over the last 20 years. Printed in full color, it conveys a sense of awe and wonder to anyone interested in the field of nuclear energy. It discusses nuclear reactor design, nuclear fuel cycles, reactor thermal-hydraulics, reactor operation, reactor safety, radiation detection and protection, and the interaction of radiation with matter. It presents an in-depth introduction to the science of nuclear power, nuclear energy production, the nuclear chain reaction, nuclear cross sections, radioactivity, and radiation transport. All major types of reactors are introduced and discussed, and the role of internet tools in their analysis and design is explored. Reactor safety and reactor containment systems are explored as well. To convey the evolution of nuclear science and engineering, historical figures and their contributions to evolution of the nuclear power industry are explored. Numerous examples are provided throughout the text, and are brought to life through life-like portraits, photographs, and colorful illustrations. The text follows a well-structured pedagogical approach, and provides a wide range of student learning features not available in other textbooks including useful equations, numerous worked examples, and lists of key web resources. As a bonus, a complete Solutions Manual and .PDF slides of all figures are available to qualified instructors who adopt the text. More than any other fundamentals book in a generation, it is student-friendly, and truly impressive in its design and its scope. It can be used for a one semester, a two semester, or a three semester course in the fundamentals of nuclear power. It can also serve as a great reference book for practicing nuclear scientists and engineers. To date, it has achieved the highest overall satisfaction of any mainstream nuclear engineering textbook available on the market today.

General Thermodynamics Springer Nature Physical, Chemical and Biological Aspects of Water is a component of Encyclopedia of Water Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. The volume presents state-of-the art subject

matter of various aspects of Physical, Chemical And Biological Aspects Of Water such as: Electrochemical Processes; Biological Contamination Of Water; Separation Thermodynamics; Process Thermodynamics; Separation Phenomena In Some Desalination Processes; Thermal Desalination Processes; Membrane-Based Desalination Processes; Some Practical Aspects Of Desalination Processes; Properties Of Natural Waters; Physical And Thermodynamic Properties Of Water In The Liquid Phase; General Characteristics Of Water; An Overview Of Fouling; Biofouling; Composite Fouling, Fundamentals And Mechanisms; Common Foulants in Desalination: Inorganic Salts; Crystallization Fouling; Biological Foulants; Change Of Distiller Performance With Fouling. This volume is aimed at the following five major target audiences: University and College Students Educators, Professional Practitioners, Research Personnel and Policy and Decision Makers

Fundamentals of Aircraft and Rocket Propulsion Thermodynamics: An Engineering Approach

Physics of Cryogenics: An Ultralow Temperature Phenomenon discusses the significant number of advances that have been made during the last few years in a variety of cryocoolers, such as Brayton, Joule-Thomson, Stirling, pulse tube, Gifford-McMahon and magnetic refrigerators. The book reviews various approaches taken to improve reliability, a major driving force for new research areas. The advantages and disadvantages of different cycles are compared, and the latest improvements in each of these cryocoolers is discussed. The book starts with the thermodynamic fundamentals, followed by the definition of

cryogenic and the associated science behind low temperature phenomena and properties. This book is an ideal resource for scientists, engineers and graduate and senior undergraduate students who need a better understanding of the science of cryogenics and related thermodynamics. Defines the fundamentals of thermodynamics that are associated with cryogenic processes Provides an overview of the history of the development of cryogenic technology Includes new, low temperature tables written by the author Deals with the application of cryogenics to preserve objects at very low temperature Explains how cryogenic phenomena work for human cell and human body preservations and new medical approaches

Thermodynamics and the Destruction of Resources John Wiley & Sons

This book is a unique, multidisciplinary effort to apply rigorous thermodynamics fundamentals, a disciplined scholarly approach, to problems of sustainability, energy, and resource uses. Applying thermodynamic thinking to problems of sustainable behavior is a significant advantage in bringing order to ill-defined questions with a great variety of proposed solutions, some of which are more destructive than the original problem. The articles are pitched at a level accessible to advanced undergraduates and graduate students in courses on sustainability, sustainable engineering, industrial ecology, sustainable manufacturing, and green engineering. The timeliness of the topic, and the urgent need for solutions make this book attractive to general readers and specialist researchers as well. Top international figures from many disciplines, including engineers, ecologists, economists, physicists, chemists, policy experts and industrial ecologists among others make up the impressive list of contributors.

Liquid Vapor Phase Change Phenomena CRC

Press

Introduces the concept of combined cycles for next generation nuclear power plants, explaining how recent advances in gas turbines have made these systems increasingly desirable for efficiency gains and cost-of-ownership reduction. Promulgates modelling and analysis techniques to identify opportunities for increased thermodynamic efficiency and decreased water usage over current Light Water Reactor (LWR) systems. Examines all power conversion aspects, from the fluid exiting the reactor to energy releases into the environment, with special focus on heat exchangers and turbo-machinery. Provides examples of small projects to facilitate nuanced understanding of the theories and implementation of combined-cycle nuclear plants. This book explores combined cycle driven efficiency of new nuclear power plants and describes how to model and analyze a nuclear heated multi-turbine power conversion system operating with atmospheric air as the working fluid. The included studies are intended to identify paths for future work on next generation nuclear power plants (GEN-IV), leveraging advances in natural-gas-fired turbines that enable coupling salt-cooled, helium-cooled, and sodium-cooled reactors to a Nuclear Air-Brayton Combined Cycle (NACC). These reactors provide the option of operating base-load nuclear plants with variable electricity output to the grid using natural gas or stored heat to produce peak power. The author describes overall system architecture, components and detailed modelling results of Brayton-Rankine Combined Cycle power conversion systems and Recuperated Brayton Cycle systems, since they offer the highest overall energy conversion efficiencies. With ever-higher temperatures predicted in GEN-IV plants, this book's investigation of potential avenues for thermodynamic efficiency gains will be of great interest to nuclear engineers and researchers, as well as power plant operators and students.

**PHYSICAL, CHEMICAL AND
BIOLOGICAL ASPECTS OF WATER**

-Volume I CRC Press

This textbook introduces students to mass and energy balances and focuses on basic principles for calculation, design, and optimization as they are applied in industrial processes and

equipment. While written primarily for undergraduate programs in chemical, energy, mechanical, and environmental engineering, the book can also be used as a reference by technical staff and design engineers interested who are in, and/or need to have basic knowledge of process engineering calculation. Concepts and techniques presented in this volume are highly relevant within many industrial sectors including manufacturing, oil/gas, green and sustainable energy, and power plant design. Drawing on 15 years of teaching experiences, and with a clear understanding of students' interests, the authors have adopted a very accessible writing style that includes many examples and additional citations to research resources from the literature, referenced at the ends of chapters.