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Engineering Materials 1 - M. F. Ashby 1996
This book gives a broad introduction to the properties of materials used in engineering applications, and is intended to provide a course in engineering materials for students with no

previous background in the subject.
Engineering Mechanics of Solids - Louis L. Bucciarelli 1994

Structural Engineer's Pocket Book, 2nd

Edition - Fiona Cobb 2009

"Now in its second edition, the Structural Engineer's Pocket Book is a comprehensive pocket reference guide for professional and student structural engineers, particularly those taking the iStructE Part 3 Exam. The combination of tables, data, facts, formulae and rules of thumb make it a valuable aid in scheme design for structural engineers in the office, in transit or on site." "Concise and precise, this second edition is updated to reflect changes to the British Standards, which are used and referenced throughout, as well as the addition of a new section on sustainability. Other subject areas include timber, masonry, steel, concrete, aluminium and glass." --Book Jacket.

A Guidebook to Nuclear Reactors - Anthony V. Nero 1979-01-01

Provides a detailed introduction to nuclear reactors, describing the four commercial types and discussing uranium resources, fuel cycles, advanced reactor systems, and issues and

problems concerning the use of nuclear power
Software Studies - Matthew Fuller 2008

This collection of short expository, critical and speculative texts offers a field guide to the cultural, political, social and aesthetic impact of software. Experts from a range of disciplines each take a key topic in software and the understanding of software, such as algorithms and logical structures.

Game Feel - Steve Swink 2008-10-13

"Game Feel" exposes "feel" as a hidden language in game design that no one has fully articulated yet. The language could be compared to the building blocks of music (time signatures, chord progressions, verse) - no matter the instruments, style or time period - these building blocks come into play. Feel and sensation are similar building blocks where game design is concerned. They create the meta-sensation of involvement with a game. The understanding of how game designers create feel, and affect feel are only partially understood by most in the field and tends to be

overlooked as a method or course of study, yet a game's feel is central to a game's success. This book brings the subject of feel to light by consolidating existing theories into a cohesive book. The book covers topics like the role of sound, ancillary indicators, the importance of metaphor, how people perceive things, and a brief history of feel in games. The associated web site contains a playset with ready-made tools to design feel in games, six key components to creating virtual sensation. There's a play palette too, so the designer can first experience the importance of that component by altering variables and feeling the results. The playset allows the reader to experience each of the sensations described in the book, and then allows them to apply them to their own projects. Creating game feel without having to program, essentially. The final version of the playset will have enough flexibility that the reader will be able to use it as a companion to the exercises in the book, working through each one to create the

feel described.

Operational Amplifiers - James K. Roberge 1975
Feedback control is an important technique that is used in many modern electronic and electromechanical systems. The successful inclusion of this technique improves performance, reliability and cost effectiveness of many designs. In this series of lectures we introduce the analytical concepts that underlie classical feedback system design. The application of these concepts is illustrated by a variety of experiments and demonstration systems. The diversity of the demonstration systems reinforces the value of the analytic methods.

Handbook of Supersonic Aerodynamics - Johns Hopkins University. Applied Physics Laboratory, Silver Spring, Md 1950

Finite Element Procedures - Klaus-Jürgen Bathe 1996

BASIC APPROACH: Comprehensive -- this text explores the "full range" of finite element

methods used in engineering practice for actual applications in computer-aided design. It provides not only an introduction to finite element methods and the commonality in the various techniques, but explores state-of-the-art methods as well -- with a focus on what are deemed to become "classical techniques" -- procedures that will be "standard and authoritative" for finite element analysis for years to come. FEATURES: presents in sufficient depth and breadth elementary concepts AND advanced techniques in statics, dynamics, solids, fluids, linear and nonlinear analysis. emphasizes both the physical and mathematical characteristics of procedures. presents some important mathematical conditions on finite element procedures. contains an abundance of worked-out examples and various complete program listings. includes many exercises/projects that often require the use of a computer program. Nuclear Systems - Neil E. Todreas 2012
Nuclear power is in the midst of a generational

change—with new reactor designs, plant subsystems, fuel concepts, and other information that must be explained and explored—and after the 2011 Japan disaster, nuclear reactor technologies are, of course, front and center in the public eye. Written by leading experts from MIT, Nuclear Systems Volume I: Thermal Hydraulic Fundamentals, Second Edition provides an in-depth introduction to nuclear power, with a focus on thermal hydraulic design and analysis of the nuclear core. A close examination of new developments in nuclear systems, this book will help readers—particularly students—to develop the knowledge and design skills required to improve the next generation of nuclear reactors. Includes a CD-ROM with Extensive Tables for Computation Intended for experts and senior undergraduate/early-stage graduate students, the material addresses: Different types of reactors Core and plant performance measures Fission energy generation and deposition Conservation equations Thermodynamics Fluid

flow Heat transfer Imparting a wealth of knowledge, including their longtime experience with the safety aspects of nuclear installations, authors Todreas and Kazimi stress the integration of fluid flow and heat transfer, various reactor types, and energy source distribution. They cover recent nuclear reactor concepts and systems, including Generation III+ and IV reactors, as well as new power cycles. The book features new chapter problems and examples using concept parameters, and a solutions manual is available with qualifying course adoption.

Materials Selection in Mechanical Design -

M. F. Ashby 1992-01-01

New materials enable advances in engineering design. This book describes a procedure for material selection in mechanical design, allowing the most suitable materials for a given application to be identified from the full range of materials and section shapes available. A novel approach is adopted not found elsewhere.

Materials are introduced through their properties;

materials selection charts (a new development) capture the important features of all materials, allowing rapid retrieval of information and application of selection techniques. Merit indices, combined with charts, allow optimisation of the materials selection process. Sources of material property data are reviewed and approaches to their use are given. Material processing and its influence on the design are discussed. The book closes with chapters on aesthetics and industrial design. Case studies are developed as a method of illustrating the procedure and as a way of developing the ideas further.

Flight Vehicle Aerodynamics - Mark Drela

2014-02-07

An overview of the physics, concepts, theories, and models underlying the discipline of aerodynamics. This book offers a general overview of the physics, concepts, theories, and models underlying the discipline of aerodynamics. A particular focus is the technique of velocity field representation and modeling via

source and vorticity fields and via their sheet, filament, or point-singularity idealizations. These models provide an intuitive feel for aerodynamic flow-field behavior and are the basis of aerodynamic force analysis, drag decomposition, flow interference estimation, and other important applications. The models are applied to both low speed and high speed flows. Viscous flows are also covered, with a focus on understanding boundary layer behavior and its influence on aerodynamic flows. The book covers some topics in depth while offering introductions and summaries of others. Computational methods are indispensable for the practicing aerodynamicist, and the book covers several computational methods in detail, with a focus on vortex lattice and panel methods. The goal is to improve understanding of the physical models that underlie such methods. The book also covers the aerodynamic models that describe the forces and moments on maneuvering aircraft, and provides a good introduction to the concepts and methods

used in flight dynamics. It also offers an introduction to unsteady flows and to the subject of wind tunnel measurements. The book is based on the MIT graduate-level course “Flight Vehicle Aerodynamics” and has been developed for use not only in conventional classrooms but also in a massive open online course (or MOOC) offered on the pioneering MOOC platform edX. It will also serve as a valuable reference for professionals in the field. The text assumes that the reader is well versed in basic physics and vector calculus, has had some exposure to basic fluid dynamics and aerodynamics, and is somewhat familiar with aerodynamics and aeronautics terminology. *Plates and Shells* - Ansel C. Ugural 2017-10-02 Noted for its practical, accessible approach to senior and graduate-level engineering mechanics, *Plates and Shells: Theory and Analysis* is a long-time bestselling text on the subjects of elasticity and stress analysis. Many new examples and applications are included to review and support key foundational concepts.

Advanced methods are discussed and analyzed, accompanied by illustrations. Problems are carefully arranged from the basic to the more challenging level. Computer/numerical approaches (Finite Difference, Finite Element, MATLAB) are introduced, and MATLAB code for selected illustrative problems and a case study is included.

Anatomy and Physiology - J. Gordon Betts
2013-04-25

Mathematics for Computer Science - Eric Lehman
2017-03-08

This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations,

counting principles; discrete probability. Further selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.

Optical Gyros and Their Application - 1999

Mechanical Vibration - William John Palm 2007
Model, analyze, and solve vibration problems, using modern computer tools. Featuring clear explanations, worked examples, applications, and modern computer tools, William Palm's Mechanical Vibration provides a firm foundation in vibratory systems. You'll learn how to apply knowledge of mathematics and science to model and analyze systems ranging from a single degree of freedom to complex systems with two and more degrees of freedom. Separate MATLAB sections at the end of most chapters show how to use the most recent features of this standard engineering tool, in the context of solving vibration problems. The text introduces Simulink

where solutions may be difficult to program in MATLAB, such as modeling Coulomb friction effects and simulating systems that contain nonlinearities. Ample problems throughout the text provide opportunities to practice identifying, formulating, and solving vibration problems. KEY FEATURES Strong pedagogical approach, including chapter objectives and summaries Extensive worked examples illustrating applications Numerous realistic homework problems Up-to-date MATLAB coverage The first vibration textbook to cover Simulink Self-contained introduction to MATLAB in Appendix A Special section dealing with active vibration control in sports equipment Special sections devoted to obtaining parameter values from experimental data

Introduction to Crystallography - Frank Hoffmann 2020-07-31

This book invites you on a systematic tour through the fascinating world of crystals and their symmetries. The reader will gain an

understanding of the symmetry of external crystal forms (morphology) and become acquainted with all the symmetry elements needed to classify and describe crystal structures. The book explains the context in a very vivid, non-mathematical way and captivates with clear, high-quality illustrations. Online materials accompany the book; including 3D models the reader can explore on screen to aid in the spatial understanding of the structure of crystals. After reading the book, you will not only know what a space group is and how to read the International Tables for Crystallography, but will also be able to interpret crystallographic specifications in specialist publications. If questions remain, you also have the opportunity to ask the author on the book's website.

Learning to Think Spatially - National Research Council 2005-02-03

Learning to Think Spatially examines how spatial thinking might be incorporated into existing standards-based instruction across the school

curriculum. Spatial thinking must be recognized as a fundamental part of K-12 education and as an integrator and a facilitator for problem solving across the curriculum. With advances in computing technologies and the increasing availability of geospatial data, spatial thinking will play a significant role in the information-based economy of the twenty-first century. Using appropriately designed support systems tailored to the K-12 context, spatial thinking can be taught formally to all students. A geographic information system (GIS) offers one example of a high-technology support system that can enable students and teachers to practice and apply spatial thinking in many areas of the curriculum. *Solar Energy and Shelter Design* - Bruce Anderson 1973

Beginning Game Development with Python and Pygame - Will McGugan 2007-12-22

This book provides readers with an introductory resource for learning how to create compelling

games using the open source Python programming language and Pygame games development library. Authored by industry veteran and Python expert Will McGugan, readers are treated to a comprehensive, practical introduction to games development using these popular technologies. They can also capitalize upon numerous tips and tricks the author has accumulated over his career creating games for some of the world's largest gaming developers.

Flight Stability and Automatic Control -

Robert C. Nelson 1998

The second edition of *Flight Stability and Automatic Control* presents an organized introduction to the useful and relevant topics necessary for a flight stability and controls course. Not only is this text presented at the appropriate mathematical level, it also features standard terminology and nomenclature, along with expanded coverage of classical control theory, autopilot designs, and modern control theory. Through the use of extensive examples,

problems, and historical notes, author Robert Nelson develops a concise and vital text for aircraft flight stability and control or flight dynamics courses.

Cellular Materials in Nature and Medicine - Lorna J. Gibson 2010-09-09

Describes the structure and mechanics of a wide range of cellular materials in botany, zoology, and medicine.

Aircraft Engines and Gas Turbines - Jack L. Kerrebrock 1992

Aircraft Engines and Gas Turbines is widely used as a text in the United States and abroad, and has also become a standard reference for professionals in the aircraft engine industry. Unique in treating the engine as a complete system at increasing levels of sophistication, it covers all types of modern aircraft engines, including turbojets, turbofans, and turboprops, and also discusses hypersonic propulsion systems of the future. Performance is described in terms of the fluid dynamic and thermodynamic

limits on the behavior of the principal components: inlets, compressors, combustors, turbines, and nozzles. Environmental factors such as atmospheric pollution and noise are treated along with performance. This new edition has been substantially revised to include more complete and up-to-date coverage of compressors, turbines, and combustion systems, and to introduce current research directions. The discussion of high-bypass turbofans has been expanded in keeping with their great commercial importance. Propulsion for civil supersonic transports is taken up in the current context. The chapter on hypersonic air breathing engines has been expanded to reflect interest in the use of scramjets to power the National Aerospace Plane. The discussion of exhaust emissions and noise and associated regulatory structures have been updated and there are many corrections and clarifications. Jack L. Kerrebrock is Richard Cockburn Maclaurin Professor of Aeronautic's and Astronautics at the Massachusetts Institute of

Technology.

Ant Colony Optimization - Marco Dorigo

2004-06-04

An overview of the rapidly growing field of ant colony optimization that describes theoretical findings, the major algorithms, and current applications. The complex social behaviors of ants have been much studied by science, and computer scientists are now finding that these behavior patterns can provide models for solving difficult combinatorial optimization problems. The attempt to develop algorithms inspired by one aspect of ant behavior, the ability to find what computer scientists would call shortest paths, has become the field of ant colony optimization (ACO), the most successful and widely recognized algorithmic technique based on ant behavior. This book presents an overview of this rapidly growing field, from its theoretical inception to practical applications, including descriptions of many available ACO algorithms and their uses. The book first describes the

translation of observed ant behavior into working optimization algorithms. The ant colony metaheuristic is then introduced and viewed in the general context of combinatorial optimization. This is followed by a detailed description and guide to all major ACO algorithms and a report on current theoretical findings. The book surveys ACO applications now in use, including routing, assignment, scheduling, subset, machine learning, and bioinformatics problems. AntNet, an ACO algorithm designed for the network routing problem, is described in detail. The authors conclude by summarizing the progress in the field and outlining future research directions. Each chapter ends with bibliographic material, bullet points setting out important ideas covered in the chapter, and exercises. Ant Colony Optimization will be of interest to academic and industry researchers, graduate students, and practitioners who wish to learn how to implement ACO algorithms.

Engineering Materials 2 - Michael F. Ashby

2014-06-28

Provides a thorough explanation of the basic properties of materials; of how these can be controlled by processing; of how materials are formed, joined and finished; and of the chain of reasoning that leads to a successful choice of material for a particular application. The materials covered are grouped into four classes: metals, ceramics, polymers and composites. Each class is studied in turn, identifying the families of materials in the class, the microstructural features, the processes or treatments used to obtain a particular structure and their design applications. The text is supplemented by practical case studies and example problems with answers, and a valuable programmed learning course on phase diagrams. *Principles of Computer System Design* - Jerome H. Saltzer 2009-05-21

Principles of Computer System Design is the first textbook to take a principles-based approach to the computer system design. It identifies,

examines, and illustrates fundamental concepts in computer system design that are common across operating systems, networks, database systems, distributed systems, programming languages, software engineering, security, fault tolerance, and architecture. Through carefully analyzed case studies from each of these disciplines, it demonstrates how to apply these concepts to tackle practical system design problems. To support the focus on design, the text identifies and explains abstractions that have proven successful in practice such as remote procedure call, client/service organization, file systems, data integrity, consistency, and authenticated messages. Most computer systems are built using a handful of such abstractions. The text describes how these abstractions are implemented, demonstrates how they are used in different systems, and prepares the reader to apply them in future designs. The book is recommended for junior and senior undergraduate students in Operating Systems,

Distributed Systems, Distributed Operating Systems and/or Computer Systems Design courses; and professional computer systems designers. Features: Concepts of computer system design guided by fundamental principles. Cross-cutting approach that identifies abstractions common to networking, operating systems, transaction systems, distributed systems, architecture, and software engineering. Case studies that make the abstractions real: naming (DNS and the URL); file systems (the UNIX file system); clients and services (NFS); virtualization (virtual machines); scheduling (disk arms); security (TLS). Numerous pseudocode fragments that provide concrete examples of abstract concepts. Extensive support. The authors and MIT OpenCourseWare provide online, free of charge, open educational resources, including additional chapters, course syllabi, board layouts and slides, lecture videos, and an archive of lecture schedules, class assignments, and design projects.

College Physics for AP® Courses - Irina Lyublinskaya 2017-08-14

The College Physics for AP(R) Courses text is designed to engage students in their exploration of physics and help them apply these concepts to the Advanced Placement(R) test. This book is Learning List-approved for AP(R) Physics courses. The text and images in this book are grayscale.

LSC CPSX (MASS INSTITUTE OF TECH) : LSC CPS2 (MIT) AN INTRODUCTION TO THE MECHANICS OF SOLIDS - Stephen Crandall 1999-08-15

This text is concerned with the mechanics of rigid and deformable solids in equilibrium. It has been prepared by members of the Mechanical Engineering Department at the Massachusetts Institute of Technology for use as a text in the first course in applied mechanics. The central aim has been to treat this subject as an engineering science. To this end the authors have clearly identified three fundamental physical considerations which govern the mechanics of

solids in equilibrium, and all discussion and theoretical development has been related to these basic considerations.

A HEAT TRANSFER TEXTBOOK - John H. Lienhard
2004

Toward More Sustainable Infrastructure -

Carl D. Martland 2011-02-22

Toward More Sustainable Infrastructure: Project Evaluation for Planners and Engineers provides readers a framework for understanding and evaluating infrastructure projects to improve their performance and sustainability, taking into account not only the financial and economic issues, but also the social and environmental impacts that affect the sustainability of infrastructure. Based on a course designed developed by the author over ten years at M.I.T., this text demonstrates how to apply the basic methods of engineering economics in evaluating major infrastructure projects and also demonstrates how these same techniques can be

useful with many routine business and personal decisions. It introduces students to project management, system performance, concepts of sustainability, methods of engineering economics, and provides numerous case studies, examples, and exercises based upon real world problems. This text fills a void in the education of many planners and engineering students, namely an understanding of why major infrastructure projects are undertaken, how they are structured and evaluated, and how they are financed. Toward More Sustainable Infrastructure: Project Evaluation for Planners and Engineers prepares readers to evaluate projects based upon an appreciation of the needs of society, the potential for sustainable development, and recognition of the problems that may result from poorly conceived or poorly implemented projects and programs.

Introduction to Process Safety for Undergraduates and Engineers - CCPS
(Center for Chemical Process Safety) 2016-06-27

Familiarizes the student or an engineer new to process safety with the concept of process safety management Serves as a comprehensive reference for Process Safety topics for student chemical engineers and newly graduate engineers Acts as a reference material for either a stand-alone process safety course or as supplemental materials for existing curricula Includes the evaluation of SACHE courses for application of process safety principles throughout the standard Ch.E. curricula in addition to, or as an alternative to, adding a new specific process safety course Gives examples of process safety in design

Physical Biology of the Cell - Rob Phillips
2012-10-29

Physical Biology of the Cell is a textbook for a first course in physical biology or biophysics for undergraduate or graduate students. It maps the huge and complex landscape of cell and molecular biology from the distinct perspective of physical biology. As a key organizing principle,

the proximity of topics is based on the physical concepts that

William Barton Rogers and the Idea of MIT -
A. J. Angulo 2009-01-26

Exploring the intersection of Rogers' educational philosophy and the rise of technical institutes in America, this biography offers a long-overdue account of the man behind MIT.

Mechanics of Solids - William B. Bickford 1993
"Computer assisted problem supplement to accompany" book.

An Introduction to the Mechanics of Solids -
Stephen H. Crandall 1978-01-01

Nuclear Systems Volume I - Neil E. Todreas
2021-01-12

Nuclear Systems, Volume I: Thermal Hydraulic Fundamentals, Third Edition, provides an in-depth introduction to nuclear power, focusing on thermal hydraulic design and analysis of the nuclear core and other key nuclear plant components. The authors stress the integration

of fluid flow and heat transfer as applied to all power reactor types and energy source distribution. They cover nuclear reactor concepts and systems, including GEN III+, GEN IV, and SMR reactors and new power cycles. The text includes new chapter examples and problems using concept parameters, full-color text and art, computer programs, figure slides, and a solutions manual. FEATURES Rigorous coverage of nuclear power generation fundamentals Description and analysis of the latest nuclear power plant designs and technologies Extensive examples in each chapter to illustrate the analysis methods which have been presented New full-color art and text features to enhance the presentation of topics Integration of fluid flow and heat transfer as applied to single- and two-phase coolants Readers will develop the knowledge and design skills needed to improve the next generation of nuclear reactors.

Fundamentals of Space Systems - Vincent L. Pisacane 2005

Fundamentals of Space Systems was developed to satisfy two objectives: the first is to provide a text suitable for use in an advanced undergraduate or beginning graduate course in both space systems engineering and space system design. The second is to be a primer and reference book for space professionals wishing to broaden their capabilities to develop, manage the development, or operate space systems. The authors of the individual chapters are practicing engineers that have had extensive experience in developing sophisticated experimental and operational spacecraft systems in addition to having experience teaching the subject material. The text presents the fundamentals of all the subsystems of a spacecraft missions and includes illustrative examples drawn from actual experience to enhance the learning experience. It included a chapter on each of the relevant major disciplines and subsystems including space systems engineering, space environment, astrodynamics, propulsion and flight mechanics,

attitude determination and control, power systems, thermal control, configuration management and structures, communications, command and telemetry, data processing, embedded flightsoftware, survivability and reliability, integration and test, mission operations, and the initial conceptual design of a typical small spacecraft mission.

DIY U - Anya Kamenetz 2010-04-01

The price of college tuition has increased more than any other major good or service for the last twenty years. Nine out of ten American high school seniors aspire to go to college, yet the United States has fallen from world leader to only the tenth most educated nation. Almost half of college students don't graduate; those who do have unprecedented levels of federal and private student loan debt, which constitutes a credit bubble similar to the mortgage crisis. The system particularly fails the first-generation, the low-income, and students of color who predominate in coming generations. What we need to know is

changing more quickly than ever, and a rising tide of information threatens to swamp knowledge and wisdom. America cannot regain its economic and cultural leadership with an increasingly ignorant population. Our choice is clear: Radically change the way higher education is delivered, or resign ourselves to never having enough of it. The roots of the words "university" and "college" both mean community. In the age of constant connectedness and social media, it's time for the monolithic, millennium-old, ivy-covered walls to undergo a phase change into something much lighter, more permeable, and fluid. The future lies in personal learning networks and paths, learning that blends experiential and digital approaches, and free and open-source educational models. Increasingly, you will decide what, when, where, and with whom you want to learn, and you will learn by doing. The university is the cathedral of modernity and rationality, and with our whole civilization in crisis, we are poised on the brink of

Reformation.

Distance Education for Teacher Training - Hilary

Perraton 2002-03-11

First published in 2002. Routledge is an imprint of Taylor & Francis, an informa company.