

Engineering Fundamentals An Introduction To Engineering By Saeed Moaveni

An easy-to-follow contemporary engineering economics text that helps making sound economic decisions without advanced mathematics. This one-semester introduction to the fundamentals of engineering economics provides an overview of the basic theory and mathematics underlying operational business decisions that engineering technology, engineering, and industrial technology students will face in the workplace. A basic knowledge of economics empowers a manager to balance costs with production. This new edition of Fundamentals of Economics for Engineering Technologists and Engineers is written in plain language. Concepts have been simplified and kept straightforward with an emphasis on "how to apply" economic principles. Practical examples as a tool for managing business data and giving detailed analysis of business operations. throughout the text make good use of Microsoft Excel templates, provided on the book's companion website, for students. Chapter-end exercises provide discussion and multiple-choice questions along with numerical problems, and a solutions manual and instructor resources is given for adopting instructors.

Now in dynamic full color, ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING, 5e helps students develop the strong problem-solving skills and solid foundation in fundamental principles they will need to become analytical, detail-oriented, and creative engineers. The book opens with an overview of what engineers do, an inside glimpse of the various areas of specialization, and a straightforward look at what it takes to succeed. It then covers the basic physical concepts and laws that students will encounter on the job. Professional Profiles throughout the text highlight the work of practicing engineers from around the globe, tying in the fundamental principles and applying them to professional engineering. Using a flexible, modular format, the book demonstrates how engineers apply physical and chemical laws and principles, as well as mathematics, to design, test, and supervise the production of millions of parts, products, and services that people use every day. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Containing contributions from leading academic and industrial researchers, this book provides a much needed update of foam science research. The first section of the book presents an accessible summary of the theory and fundamentals of foams. This includes chapters on morphology, drainage, Ostwald ripening, coalescence, rheology, and pneumatic foams. The second section demonstrates how this theory is used in a wide range of industrial applications, including foam fractionation, froth flotation and foam mitigation. It includes chapters on suprafroths, flotation of oil sands, foams in enhancing petroleum recovery, Gas-liquid Mass Transfer in foam, foams in glass manufacturing, fire-fighting foam technology and consumer product foams. Key features: Foam fractionation is an exciting and emerging technology, starting to gain significant attention Discusses a vital topic for many industries, especially mineral processing, petroleum engineering, bioengineering, consumer products and food sector Links foam science theory to industrial applications, making it accessible to an engineering science audience Summarizes the latest developments in this rapidly progressing area of research Contains contributions from leading international researchers from academia and industry

This book provides a fundamental and practical introduction to radio frequency and microwave engineering and physical aspects of wireless communication. In this book, the author addresses a wide range of radio-frequency and microwave topics with emphasis on physical aspects including EM and voltage waves, transmission lines, passive circuits, antennas, radio wave propagation. Up-to-date RF design tools like RF circuit simulation, EM simulation and computerized smith charts, are used in various examples to demonstrate how these methods can be applied effectively in RF engineering practice. Design rules and working examples illustrate the theoretical parts. The examples are close to real world problems, so the reader can directly transfer the methods within the context of their own work. At the end of each chapter a list of problems is given in order to deepen the reader's understanding of the chapter material and practice the new competences. Solutions are available on the author's website. Key Features: Presents a wide range of RF topics with emphasis on physical aspects e.g. EM and voltage waves, transmission lines, passive circuits, antennas Uses various examples of modern RF tools that show how these methods can be applied productively in RF engineering practice Incorporates various design examples using circuit and electromagnetic (EM) simulation software Discusses the propagation of waves: their representation, their effects, and their utilization in passive circuits and antenna structures Provides a list of problems at the end of each chapter Includes an accompanying website containing solutions to the problems (http://www.fh-dortmund.de/gustrau_rf_textbook) This will be an invaluable textbook for bachelor and masters students on electrical engineering courses (microwave engineering, basic circuit theory and electromagnetic fields, wireless communications). Early-stage RF practitioners, engineers (e.g. application engineer) working in this area will also find this book of interest.

While the ASCE Body of Knowledge (BOK2) is the codified source for all technical and non-technical information necessary for those seeking to attain licensure in civil engineering, recent graduates have notoriously been lacking in the non-technical aspects even as they excel in the technical. Fundamentals of Civil Engineering: An Introduction to the ASCE Body of Knowledge addresses this shortfall and helps budding engineers develop the knowledge, skills, and attitudes suggested and implied by the BOK2. Written as a resource for all of the non-technical outcomes not specifically covered in the BOK2, it details fundamental aspects of fourteen outcomes addressed in the second edition of the ASCE Body of Knowledge and encourages a broader perspective and understanding of the role of civil engineers in society as well as the reciprocal influence between civil engineering and social evolution. With discussion questions and group activities at the end of each chapter, topics covered include humanities and social sciences, experimentation, sustainability, contemporary issues and historical perspectives, risk and uncertainty, communication, public policy, globalization, leadership and teamwork, and professional and ethical responsibilities. Suitable for both current and former students in pursuit of further breadth and depth of knowledge and professional maturity, this primer promotes introspection, self-evaluation, and self-learning. It details those attitudes that are essential to the achievement of personal and professional success and advancement to positions of leadership, and encourages an appreciation of the human values that are fundamental to professional practice.

Fundamentals of Materials Engineering - A Basic Guide is a helpful textbook for readers learning the basics of materials science. This book covers important topics and fundamental concepts of materials engineering including crystal structure, imperfections, mechanical properties of materials, polymers, powder metallurgy, corrosion and composites. The authors have explained the concepts in an effective way and by using simple language for the benefit of a broad range of readers. This book is also beneficial to the students in engineering courses at B.Sc, M.Sc, and M.Tech. levels.

The future presents society with enormous challenges on many fronts, such as energy, infrastructures in urban settings, mass migrations, mobility, climate, healthcare for an aging population, social security and safety. In the coming decennia, leaps in scientific discovery and innovations will be necessary in social, political, economic and technological fields. Technology, the domain of engineers and engineering scientists, will be an essential component in making such innovations possible. Engineering is the social practice of conceiving, designing, implementing, producing and sustaining complex technological products, processes or systems. The complexity is often caused by the behaviour of the system development that changes with time that cannot be predicted in advance from its constitutive parts. This is especially true when human decisions play a key role in solving the problem. Solving complex systems requires a solid foundation in mathematics and the natural sciences, and an understanding of human nature. Therefore, the skills of the future engineers must extend over an array of fields. The book was born from the "Introduction to Engineering" courses given by the author in various universities. At that time the author was unable to find one text book, that covered all the subjects of the course. The book claims to fulfil this gap.

Engineering Fundamentals: An Introduction to Engineering Cengage Learning

This book serves as a tool for any engineer who wants to learn about circuits, electrical machines and drives, power electronics, and power systems basics. From time to time, engineers find they need to brush up on certain fundamentals within electrical engineering. This clear and concise book is the ideal learning tool for them to quickly learn the basics or develop an understanding of newer topics. Fundamentals of Electric Power Engineering: From Electromagnetics to Power Systems helps non-electrical engineers amass power system information quickly by imparting tools and trade tricks for remembering basic concepts and grasping new developments. Created to provide more in-depth knowledge of fundamentals—rather than a broad range of applications only—this comprehensive and up-to-date book: Covers topics such as circuits, electrical machines and drives, power electronics, and power system basics as well as new generation technologies. Allows non-electrical engineers to build their electrical knowledge quickly. Includes exercises with worked solutions to assist readers in grasping concepts found in the book. Contains "in-depth" side bars throughout which pique the reader's curiosity. Fundamentals of Electric Power Engineering is an ideal refresher course for those involved in this interdisciplinary branch. For supplementary files for this book, please visit <http://booksupport.wiley.com/>

Gives students of automotive engineering a basic understanding of the principles involved with designing a vehicle and includes details of engines and transmissions, vehicle aerodynamics and computer modelling.

The fifth edition of "Engineering Fundamentals & Problem Solving" is written to motivate engineering students during their first year. A complete introduction to the engineering field, this text will help students develop the skills to solving open-ended problems in SI and customary units while presenting solutions in a logical manner. Eide introduces students to subject areas that are common to engineering disciplines that require the application of fundamental engineering concepts. For those instructors who desire a shorter text to complement other application specific texts, McGraw-Hill offers customization through our Primis-Build a Book, or the BEST version of this text. Please see Eide's "Introduction to Engineering Design and Problem Solving," 2nd edition, from the BEST series.

Sound reinforcement is the increasing of the power of sound signals and reproducing them as acoustic signals. This book gives an introduction to the fundamentals of sound reinforcement engineering, and also explains how it relates to disciplines such as room acoustics. It discusses in detail the components and layout of sound reinforcement systems and gives examples and case studies of successfully installed systems.

Requirements engineering is the process of eliciting individual stakeholder requirements and needs and developing them into detailed, agreed requirements documented and specified in such a way that they can serve as the basis for all other system development activities. In this textbook, Klaus Pohl provides a comprehensive and well-structured introduction to the fundamentals, principles, and techniques of requirements engineering. He presents approved techniques for eliciting, negotiating and documenting as well as validating, and managing requirements for software-intensive systems. The various aspects of the process and the techniques are illustrated using numerous examples based on his extensive teaching experience and his work in industrial collaborations. His presentation aims at professionals, students, and lecturers in systems and software engineering or business applications development. Professionals such as project managers, software architects, systems analysts, and software engineers will benefit in their daily work from the didactically well-presented combination of validated procedures and industrial experience. Students and lecturers will appreciate the comprehensive description of sound fundamentals, principles, and techniques, which is completed by a huge commented list of references for further reading. Lecturers will find additional teaching material on the book's website, www.requirements-book.com.

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.

Many, in their quest for knowledge in engineering, find typical textbooks intimidating. Perhaps due to an extensive amount of physics theory, an overwhelming barrage of math, and not enough practical application of the engineering principles, laws, and

equations. Therein lies the difference between this text and those voluminous and daunting conventional university engineering textbooks. This text leads the reader into more complex and abstract content after explaining the electrical engineering concepts and principles in an easy to understand fashion, supported by analogies borrowed from day-to-day examples and other engineering disciplines. Many complex electrical engineering concepts, for example, power factor, are examined from multiple perspectives, aided by diagrams, illustrations, and examples that the reader can easily relate to. Throughout this book, the reader will gain a clear and strong grasp of electrical engineering fundamentals, and a better understanding of electrical engineering terms, concepts, principles, laws, analytical techniques, solution strategies, and computational techniques. The reader will also develop the ability to communicate with professional electrical engineers, controls engineers, and electricians on their "wavelength" with greater confidence. Study of this book can help develop skills and preparation necessary for succeeding in the electrical engineering portion of various certification and licensure exams, including Fundamentals of Engineering (FE), Professional Engineering (PE), Certified Energy Manager (CEM), and many other trade certification tests. This text can serve as a compact and simplified electrical engineering desk reference. This book provides a brief introduction to the NEC®, the Arc-Flash Code, and a better understanding of electrical energy and associated cost. If you need to gain a better understanding of myriad battery alternatives available in the market, their strengths and weaknesses, and how batteries compare with capacitors as energy storage devices, this book can be a starting point. This book is ideal for engineers, engineering students, facility managers, engineering managers, program/project managers, and other executives who do not possess a current working knowledge of electrical engineering. Because of the simple explanations, analogies, and practical examples employed by the author, this book serves as an excellent learning tool for non-engineers, technical writers, attorneys, electrical sales professionals, energy professionals, electrical equipment procurement agents, construction managers, facility managers, and maintenance managers. Now in dynamic full color, SI ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING, 5e helps students develop the strong problem-solving skills and solid foundation in fundamental principles they will need to become analytical, detail-oriented, and creative engineers. The book opens with an overview of what engineers do, an inside glimpse of the various areas of specialization, and a straightforward look at what it takes to succeed. It then covers the basic physical concepts and laws that students will encounter on the job. Professional Profiles throughout the text highlight the work of practicing engineers from around the globe, tying in the fundamental principles and applying them to professional engineering. Using a flexible, modular format, the book demonstrates how engineers apply physical and chemical laws and principles, as well as mathematics, to design, test, and supervise the production of millions of parts, products, and services that people use every day. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

"The book may be visualized as having three major sections. The first, encompassing the first three chapters, is an introduction to the engineering profession. Chapter 1 provides information on engineering disciplines and functions. If a formal orientation course is given separately, Chapter 1 can be simply a reading assignment and the basis for students to investigate disciplines of interest. Chapter 2 outlines the course of study and preparation for an engineering work environment. Interdisciplinary projects, teaming, and ethics are discussed. Chapter 3 is an introduction to the design process. If time permits, this material can be supplemented with case studies and your personal experiences to provide an interesting and motivating look at engineering"--

This edition of 'Micro Process Engineering' was originally published in the successful series 'Advanced Micro & Nanosystems'. Authors from leading industrial players and research institutions present a concise and didactical introduction to Micro Process Engineering, the combination of microtechnology and process engineering into a most promising and powerful tool for revolutionizing chemical processes and industrial mass production of bulk materials, fine chemicals, pharmaceuticals and many other products. The book takes the readers from the fundamentals of engineering methods, transport processes, and fluid dynamics to device conception, simulation and modelling, control interfaces and issues of modularity and compatibility. Fabrication strategies and techniques are examined next, focused on the fabrication of suitable microcomponents from various materials such as metals, polymers, silicon, ceramics and glass. The book concludes with actual applications and operational aspects of micro process systems, giving broad coverage to industrial efforts in America, Europe and Asia as well as laboratory equipment and education.

This updated textbook provides a balanced, seamless treatment of both classic, analytic methods and contemporary, computer-based techniques for conceptualizing and designing a structure. New to the second edition are treatments of geometrically nonlinear analysis and limit analysis based on nonlinear inelastic analysis. Illustrative examples of nonlinear behavior generated with advanced software are included. The book fosters an intuitive understanding of structural behavior based on problem solving experience for students of civil engineering and architecture who have been exposed to the basic concepts of engineering mechanics and mechanics of materials. Distinct from other undergraduate textbooks, the authors of Fundamentals of Structural Engineering, 2/e embrace the notion that engineers reason about behavior using simple models and intuition they acquire through problem solving. The perspective adopted in this text therefore develops this type of intuition by presenting extensive, realistic problems and case studies together with computer simulation, allowing for rapid exploration of how a structure responds to changes in geometry and physical parameters. The integrated approach employed in Fundamentals of Structural Engineering, 2/e make it an ideal instructional resource for students and a comprehensive, authoritative reference for practitioners of civil and structural engineering.

Specifically designed as an introduction to the exciting world of engineering, ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING encourages students to become engineers and prepares them with a solid foundation in the fundamental principles and physical laws. The book begins with a discovery of what engineers do as well as an inside look into the various areas of specialization. An explanation on good study habits and what it takes to succeed is included as well as an introduction to design and problem solving, communication, and ethics. Once this foundation is established, the book moves on to the basic physical concepts and laws that students will encounter regularly. The framework of this text teaches students that engineers apply physical and chemical laws and principles as well as mathematics to design, test, and supervise the production of millions of parts, products, and services that people use every day. By gaining problem solving skills and an understanding of fundamental principles, students are on their way to becoming analytical, detail-oriented, and creative engineers. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Known as the bible of biomedical engineering, The Biomedical Engineering Handbook, Fourth Edition, sets the standard against which all other references of this nature are measured. As such, it has served as a major resource for both skilled professionals

and novices to biomedical engineering. Biomedical Engineering Fundamentals, the first volume of the handbook, presents material from respected scientists with diverse backgrounds in physiological systems, biomechanics, biomaterials, bioelectric phenomena, and neuroengineering. More than three dozen specific topics are examined, including cardiac biomechanics, the mechanics of blood vessels, cochlear mechanics, biodegradable biomaterials, soft tissue replacements, cellular biomechanics, neural engineering, electrical stimulation for paraplegia, and visual prostheses. The material is presented in a systematic manner and has been updated to reflect the latest applications and research findings.

Environmental Engineering: Fundamentals, Sustainability, Design presents civil engineers with an introduction to chemistry and biology, through a mass and energy balance approach. ABET required topics of emerging importance, such as sustainable and global engineering are also covered. Problems, similar to those on the FE and PE exams, are integrated at the end of each chapter. Aligned with the National Academy of Engineering's focus on managing carbon and nitrogen, the 2nd edition now includes a section on advanced technologies to more effectively reclaim nitrogen and phosphorous. Additionally, readers have immediate access to web modules, which address a specific topic, such as water and wastewater treatment. These modules include media rich content such as animations, audio, video and interactive problem solving, as well as links to explorations. Civil engineers will gain a global perspective, developing into innovative leaders in sustainable development.

This book is a short introduction to the engineering principles of harnessing the vast potential of microorganisms, and animal and plant cells in making biochemical products. It was written for scientists who have no background in engineering, and for engineers with minimal background in biology. The overall subject dealt with is process, but the coverage goes beyond the process of biomanufacturing in the bioreactor, and extends to the factory of cell's biosynthetic machinery. Starting with an overview of biotechnology and organism, engineers are eased into biochemical reactions and life scientists are exposed to the technology of production using cells. Subsequent chapters allow engineers to be acquainted with biochemical pathways, while life scientist learn about stoichiometric and kinetic principles of reactions and cell growth. This leads to the coverage of reactors, oxygen transfer and scale up. Following three chapters on biomanufacturing of current and future importance, i.e. cell culture, stem cells and synthetic biology, the topic switches to product purification, first with a conceptual coverage of operations used in bioseparation, and then a more detailed analysis to provide a conceptual understanding of chromatography, the modern workhorse of bioseparation.

Drawing on principles from engineering and life sciences, this book is for practitioners in biotechnology and bioengineering. The author has used the material within this book for a course for advanced students in both engineering and life sciences. To this end, problems are provided at the end of each chapter.

Engineering Fundamentals is designed to meet the latest course requirements, and brings together the essential material from Roger Timings' previous engineering texts: Fundamentals of Mechanical Engineering, Fundamentals of Engineering, Basic Engineering Technology and General Engineering. A highly readable text is supported by numerous illustrations, learning objectives and exercises at the end of each chapter, making Engineering Fundamentals a complete student-focused course that is ideal for classroom, workshop and independent study.

This text aims to expose students to the science of optics and optical engineering without the complications of advanced physics and mathematical theory.

Forensic engineers often specialize in a particular area such as structures, fires, or accident reconstruction. However, the nature of the work often requires broad knowledge in the interrelated areas of physics, chemistry, biomechanics, and engineering. Covering cases as varied as assessment of workplace accidents to the investigation of Halliburton

The field of environmental engineering is rapidly emerging into a mainstream engineering discipline. For a long time, environmental engineering has suffered from the lack of a well-defined identity. At times, the problems faced by environmental engineers require knowledge in many engineering fields, including chemical, civil, sanitary, and mechanical engineering. Increased demand for undergraduate training in environmental engineering has led to growth in the number of undergraduate programs offered. Fundamentals of Environmental Engineering provides an introductory approach that focuses on the basics of this growing field. This informative reference provides an introduction to environmental pollutants, basic engineering principles, dimensional analysis, physical chemistry, mass, and energy and component balances. It also explains the applications of these ideas to the understanding of key problems in air, water, and soil pollution.

Created for all levels of students, this new text provides a thorough introduction to engineering. It explores the design process and covers most engineering disciplines. Engineering careers and their requirements are featured throughout the book.

The Second Edition of this book includes a revision and an extension of its former version. The book is divided into three parts, namely: Introduction, The Aircraft, and Air Transportation, Airports, and Air Navigation. It also incorporates an appendix with somewhat advanced mathematics and computer based exercises. The first part is divided in two chapters in which the student must achieve to understand the basic elements of atmospheric flight (ISA and planetary references) and the technology that apply to the aerospace sector, in particular with a specific comprehension of the elements of an aircraft. The second part focuses on the aircraft and it is divided in five chapters that introduce the student to aircraft aerodynamics (fluid mechanics, airfoils, wings, high-lift devices), aircraft materials and structures, aircraft propulsion, aircraft instruments and systems, and atmospheric flight mechanics (performances and stability and control). The third part is devoted to understand the global air transport system (covering both regulatory and economical frameworks), the airports, and the global air navigation system (its history, current status, and future development). The theoretical contents are illustrated with figures and complemented with some problems/exercises. The course is complemented by a practical approach. Students should be able to apply theoretical knowledge to solve practical cases using academic (but also industrial) software, such as Python and XFLR5. The course also includes a series of assignments to be completed individually or in groups. These tasks comprise an oral presentation, technical reports, scientific papers, problems, etc. The course is supplemented by scientific and industrial seminars, recommended readings, and a visit to an institution or industry related to the study and of interest to the students. All this documentation is not explicitly in the book but can be

accessed online at the book's website www.aerospaceengineering.es. The slides of the course are also available at the book's website: <http://www.aerospaceengineering.es> Fundamentals of Aerospace Engineering is licensed under a Creative Commons Attribution-Share Alike (CC BY-SA) 3.0 License, and it is offered in open access both in "pdf" format. The document can be accessed and downloaded at the book's website. This licensing is aligned with a philosophy of sharing and spreading knowledge. Writing and revising over and over this book has been an exhausting, very time consuming activity. To acknowledge author's effort, a donation platform has been activated at the book's website. This translation brings a landmark systems engineering (SE) book to English-speaking audiences for the first time since its original publication in 1972. For decades the SE concept championed by this book has helped engineers solve a wide variety of issues by emphasizing a top-down approach. Moving from the general to the specific, this SE concept has situated itself as uniquely appealing to both highly trained experts and anybody managing a complex project. Until now, this SE concept has only been available to German speakers. By shedding the overtly technical approach adopted by many other SE methods, this book can be used as a problem-solving guide in a great variety of disciplines, engineering and otherwise. By segmenting the book into separate parts that build upon each other, the SE concept's accessibility is reinforced. The basic principles of SE, problem solving, and systems design are helpfully introduced in the first three parts. Once the fundamentals are presented, specific case studies are covered in the fourth part to display potential applications. Then part five offers further suggestions on how to effectively practice SE principles; for example, it not only points out frequent stumbling blocks, but also the specific points at which they may appear. In the final part, a wealth of different methods and tools, such as optimization techniques, are given to help maximize the potential use of this SE concept. Engineers and engineering students from all disciplines will find this book extremely helpful in solving complex problems. Because of its practicable lessons in problem-solving, any professional facing a complex project will also find much to learn from this volume.

Explore engineering as a career with this introduction for ages 12 to 16 The job of an engineer is to solve all sorts of complex challenges facing the world while improving our lives through creative, innovative ideas. This engineering book for teens gives you a look into what engineers do and how they drive society forward through math and science. From designing tablets and smartphones to reimagining the way we collect and store renewable energy, this engineering book for teens introduces you to the major engineering disciplines and their distinct specialties, famous engineers throughout history, and more. Engineering for Teens offers: Engineering fundamentals--Discover the four main branches of engineering and their different specialties. Inspired inventions--Get examples of the incredible things that engineers have created, like fuel cells and medicines. Inclusivity in engineering--Learn all about the diversity within the field of engineering. Discover the wonders of engineering and prepare yourself for a life of scientific discovery with this engineering book for teens.

This book provides fundamentals of Mechanical Engineering For The undergraduate students of all branches of engineering. The various topics of Mechanical Engineering that are discussed in the book are: * Machine tool and fabrication process * Thermodynamics, IC engines and steam turbines * Hydraulic turbines and pumps * Refrigeration and air-conditioning * Power transmission methods and devices * Stresses, strain, shear force and bending moment diagrams * Numerical control machines. (NC and CNCs) * Applied mechanics. A large number of worked out problems, exercises and MCQs are provided in all the chapters.

Real-world engineering problems are rarely, if ever, neatly divided into mechanical, electrical, chemical, civil, and other categories. Engineers from all disciplines eventually encounter computer and electronic controls and instrumentation, which require at least a basic knowledge of electrical and other engineering specialties, as well as associated economics, and environmental, political, and social issues. Co-authored by Charles Gross—one of the most well-known and respected professors in the field of electric machines and power engineering—and his world-renowned colleague Thad Roppel, Fundamentals of Electrical Engineering provides an overview of the profession for engineering professionals and students whose specialization lies in areas other than electrical. For instance, civil engineers must contend with commercial electrical service and lighting design issues. Mechanical engineers have to deal with motors in HVAC applications, and chemical engineers are forced to handle problems involving process control. Simple and easy-to-use, yet more than sufficient in rigor and coverage of fundamental concepts, this resource teaches EE fundamentals but omits the typical analytical methods that hold little relevance for the audience. The authors provide many examples to illustrate concepts, as well as homework problems to help readers understand and apply presented material. In many cases, courses for non-electrical engineers, or non-EEs, have presented watered-down classical EE material, resulting in unpopular courses that students hate and senior faculty members understandingly avoid teaching. To remedy this situation—and create more well-rounded practitioners—the authors focus on the true EE needs of non-EEs, as determined through their own teaching experience, as well as significant input from non-EE faculty. The book provides several important contemporary interdisciplinary examples to support this approach. The result is a full-color modern narrative that bridges the various EE and non-EE curricula and serves as a truly relevant course that students and faculty can both enjoy.

Power transfer for large systems depends on high system voltages. The basics of high voltage laboratory techniques and phenomena, together with the principles governing the design of high voltage insulation, are covered in this book for students, utility engineers, designers and operators of high voltage equipment. In this new edition the text has been entirely revised to reflect current practice. Major changes include coverage of the latest instrumentation, the use of electronegative gases such as sulfur hexafluoride, modern diagnostic techniques, and high voltage testing procedures with statistical approaches. A classic text on high voltage engineering Entirely revised to bring you up-to-date with current practice Benefit from expanded sections on testing and diagnostic techniques

This important reference/text provides technologists with the basic information necessary to interact scientifically with molecular biologists and get involved in scaling up laboratory procedures and designing and constructing commercial plants. Requiring no previous training or experience in biology, Genetic Engineering Fundamentals explains the biological and chemical principles of recombinant DNA technology ... emphasizes techniques used to isolate and clone specific genes from bacteria, plants, and animals, and methods of scaling-up the formation of the gene product for commercial applications ... analyzes problems encountered in scaling-up the microprocessing of biochemical procedures ... includes an extensive glossary and numerous illustrations ... identifies other resource materials in the field ... and more. Presenting the fundamentals of biochemistry and molecular biology to workers and students in other fields, this state-of-the-art reference/text is essential reading for technologists in chemistry and engineering; biomedical, chemical, electrical and electronics, industrial, mechanical, manufacturing, design, plant, control, civil, genetic, and environmental engineers; chemists, botanists, and zoologists; and advanced undergraduate and graduate courses in engineering, biotechnology, and industrial microbiology.

A 1998 beginner's guide to problem solving with computers - both a text for introductory-level engineering undergraduates and a self-study guide for practising engineers.

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