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HORTON GEMMA

This open access book reports on innovative methods, technologies and strategies for mastering uncertainty in technical systems. Despite the fact that current research on uncertainty is mainly focusing on uncertainty quantification and analysis, this book gives emphasis to innovative ways to master uncertainty in engineering design, production and product usage alike. It gathers authoritative contributions by more than 30 scientists reporting on years of research in the areas of engineering, applied mathematics and law, thus offering a timely, comprehensive and multidisciplinary account of theories and methods for quantifying data, model and structural uncertainty, and of fundamental strategies for mastering uncertainty. It covers key concepts such as robustness, flexibility and resilience in detail. All the described methods, technologies and strategies have been validated with the help of three technical systems, i.e. the Modular Active Spring-Damper System, the Active Air Spring and the 3D Servo Press, which have been in turn developed and tested during more than ten years of cooperative research. Overall, this book offers a timely, practice-oriented reference guide to graduate students, researchers and professionals dealing with uncertainty in the broad field of mechanical engineering.

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.

Intended for courses in Finite Element Analysis, this text presents the theory of finite element analysis. It explores its application as a design/modeling tool, and explains in detail how to use ANSYS intelligently and effectively.

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.

This book takes a modern, all-inclusive look at manufacturing processes. Its coverage is strategically divided—65% concerned with manufacturing process technologies, 35% dealing with engineering materials and production systems.

Junior or Senior level Vibration courses in Departments of Mechanical Engineering. A thorough treatment of vibration theory and its engineering applications, from simple degree to multi de-

gree-of-freedom system.

Gain a better understanding of the connections among earth's finite resources and the environmental, social, ethical, technical and economical impacts of your daily decisions with Moaveni's **ENERGY, ENVIRONMENT, AND SUSTAINABILITY**, 2nd Edition. As climate change has an increasing influence on today's world, you learn how to evaluate energy and environmental footprints to make environmentally sound decisions and help preserve natural resources. Become more aware of your own energy consumption as you study how much energy is required to manufacture, transport, use and dispose of common products. A new chapter highlights evidence-based analysis and how this systematic approach to sustainability can lead to more reliable decisions. Relevant, everyday examples bring concepts to life, while hands-on problems give you experience in analyzing information, preparing reports and presentations and working within teams. You learn how to make the world a better place, beginning with your own personal changes. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Extensively updated edition of Norton's classic text on noise and vibration for students, researchers and engineers.

This engaging and accessible book explains the scientific principles behind guns, both ancient and modern. It connects their evolution to advances in science, as well as tracing the developments of projectiles and propellants. It is not limited to small arms but also looks at the science of enormous guns such the Paris Gun, for example, and reviews the efforts to build a gun to launch projectiles into space. Extremely fast guns are also covered, such as two-stage guns and rail guns. Further, the book provides insight into the science of terminal ballistics and wound ballistics as well as the challenging subject of gun control. It is full of interesting facts for all who are curious about the science and history of guns, as well as those for whom the gun is an accessory of their profession.

Fundamentals of Machine Component Design presents a thorough introduction to the concepts and methods essential to mechanical engineering design, analysis, and application. In-depth coverage of major topics, including free body diagrams, force flow concepts, failure theories, and fatigue design, are coupled with specific applications to bearings, springs, brakes, clutches, fasteners, and more for a real-world functional body of knowledge. Critical thinking and problem-solving skills are strengthened through a graphical procedural framework, enabling the effective identification of problems and clear presentation of solutions. Solidly focused on practical applications of fundamental theory, this text helps students develop the ability to conceptualize designs, interpret test results, and facilitate improvement. Clear presentation reinforces central ideas with multiple case studies, in-class exercises, homework problems, computer software data sets, and access to supplemental internet resources, while appendices provide extensive reference material on processing methods, joinability, failure modes, and material properties to aid student comprehension and encourage self-study.

What can you do with a degree in architecture? Where might it take you? What kind of challenges could you address? **Architects After Architecture** reframes architecture as a uniquely versatile way of acting on the world, far beyond that of designing buildings. In this volume, we meet forty practitioners through profiles, case studies, and interviews, who have used their architectural training in new and resourceful ways to tackle the climate crisis, work with refugees, advocate for diversity, start tech companies, become leading museum curators, tackle homelessness, draft public policy, become developers, design videogames, shape public discourse, and much more. Together, they describe a future of architecture that is diverse and engaged, expanding the limits of the discipline, and offering new paths forward in times of crisis. Whether you are an architecture student or a practicing architect considering a change, you'll find this an encouraging and inspiring read. Please visit the **Architects After Architecture** website for more information, including future book launches and events: architectsafterarchitecture.com

Studying engineering, whether it is mechanical, electrical or civil relies heavily on an understanding of mathematics. This new textbook clearly demonstrates the relevance of mathematical principles and shows how to apply them to solve real-life engineering problems. It deliberately starts at an elementary level so that students who are starting from a low knowledge base will be able to quickly get up to the level required. Students who have not studied mathematics for some time will find this an excellent refresher. Each chapter starts with the basics before gently increasing in complexity. A full outline of essential definitions, formulae, laws and procedures are introduced before real world situations, practicals and problem solving demonstrate how the theory is applied. Focusing on learning through practice, it contains examples, supported by 1,600 worked problems and 3,000 further problems contained within exercises throughout the text. In addition, 34 revision tests are included at regular intervals. An interactive companion website is also provided containing 2,750 further problems with worked solutions and instructor materials

This custom edition is published for the University of Wollongong.

Build your skills in the science and art of maternity and pediatric nursing! **Maternal-Child Nursing**, 6th Edition makes it easy to understand the essentials of women's health, maternity, and children's nursing care. It simplifies the steps of the nursing process and relates them to care, helping you develop clinical judgment skills and provide safe, effective care in evidence-based practice. This edition adds case studies preparing you for the new Next Generation NCLEX® examination. Best of all, active learning tools and features make it fun to master nursing concepts, offering plenty of opportunities to apply your knowledge to the practice setting. **Nursing Care Plans** help students apply the nursing process to plan individualized care in the most common maternity and pediatric situations. **Clinical Reference** sections in pediatrics chapters provide basic information on disorders and their related anatomy and physiology, differences in body systems between children and adults, commonly used drugs, lab values, diagnostic tests, and procedures. **Clinical Judgment** boxes highlight situations designed to test clinical judgment skills. **Health Promotion** boxes highlight information needed to perform a comprehensive assessment of well infants and children at various ages. **Safety Alerts** emphasize what is important to remember when providing safe and optimal quality care. **Pathophysiology** boxes present an illustrated overview of illnesses and how to manage them. **Want to Know** boxes provide teaching guidelines, including sample answers for questions that are likely to be asked or topics that need to be taught. **Communication Cues** offer practical tips for verbal and nonverbal communication with patients and families. **Glossary** at the end of the book gives students quick access to all key terms and definitions. **NEW!** Next Generation NCLEX® (NGN) examination-style case studies expose students to how content will be tested in the exam; case studies are either single-situation or unfolding studies. **NEW!** Updated **Drug Guides** summarize the latest information on medications.

The **Handbook Philosophy of Technology and Engineering Sciences** addresses numerous issues in the emerging field of the philosophy of those sciences that are involved in the technological process of designing, developing and making of new technical artifacts and systems. These issues include the nature of design, of technological knowledge, and of technical artifacts, as well as the toolbox of engineers. Most of these have thus far not been analyzed in general philosophy of science, which has traditionally but inadequately regarded technology as mere applied science and focused on physics, biology, mathematics and the social sciences. • First comprehensive philosophical handbook on technology and the engineering sciences • Unparalleled in scope including explorative articles • In depth discussion of technical artifacts and their ontology • Provides extensive analysis of the nature of engineering design • Focuses in detail on the role of models in technology High-pressure science has undergone a revolution in the last 15 years. The development of intense new x-ray and neutron sources, improved detectors, new instrumentation, greatly increased computation power, and advanced computational algorithms have enabled researchers to determine the behavior of matter at static pressures in excess of 400 GPa. Shock-wave techniques have al-

lowed access to the experimental pressure-temperature range beyond 1 TPa and 10,000 K. High-Pressure Physics introduces the current state of the art in this field. Based on lectures presented by leading researchers at the 63rd Scottish Universities Summer School in Physics, the book summarizes the latest experimental and theoretical techniques. Highlighting applications in a range of physics disciplines—from novel materials synthesis to planetary interiors—this book cuts across many areas and supplies a solid grounding in high-pressure physics. Chapters cover a wide array of topics and techniques, including: High-pressure devices The design of pressure cells Electrical transport experiments The fabrication process for customizing diamond anvils Equations of state (EOS) for solids in a range of pressures and temperatures Crystallography, optical spectroscopy, and inelastic x-ray scattering (IXS) techniques Magnetism in solids The internal structure of Earth and other planets Measurement and control of temperature in high-pressure experiments Solid state chemistry and materials research at high pressure Liquids and glasses The study of hydrogen at high density A resource for graduate students and young researchers, this accessible reference provides an overview of key research areas and applications in high-pressure physics.

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.

FUNDAMENTALS OF GEOTECHNICAL ENGINEERING, 5E offers a powerful combination of essential components from Braja Das' market-leading books: PRINCIPLES OF GEOTECHNICAL ENGINEERING and PRINCIPLES OF FOUNDATION ENGINEERING in one cohesive book. This unique, concise geotechnical engineering book focuses on the fundamental concepts of both soil mechanics and foundation engineering without the distraction of excessive details or cumbersome alternatives. A wealth of worked-out, step-by-step examples and valuable figures help readers master key concepts and strengthen essential problem solving skills. Prestigious authors Das and Sivakugan maintain the careful balance of today's most current research and practical field applications in a proven approach that has made Das' books leaders in the field. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Learning basic mathematics is easy and engaging with this combined text/workbook! BASIC COLLEGE MATHEMATICS is infused with Pat McKeague's passion for teaching mathematics. With years of classroom experience, he knows how to write in a way that you will understand and appreciate. McKeague's proven EPAS approach (Example, Practice Problem, Answer, and Solution) moves you through each new concept with ease while helping you break up problem solving into manageable steps. Real-world applications in every chapter of this user-friendly book highlight the relevance of what you are learning. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Providing a broad introduction to industrial and systems engineering, this book defines industrial and systems engineering, describes its place in the business world, and offers a wide picture of the functional areas with some solution techniques. Divided into three parts, the reference explains the role industrial and systems engineering play in an organization and how to manage and control the function ... covers elementary systems theory and feedback ... presents a typical problem for each of the major methodologies of industrial and systems engineering and provides the tools and techniques for effectively solving it ... discusses computerization of these techniques ... emphasizes the relationship of industrial engineering to such areas as operations research and ergonomics ... explores integrated systems design, showing how the I.E. must bring together all the detailed pieces into an integrated system ... adds coverage of simulation ... and updates data where applicable. Suitable for industrial and systems engineers.

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 is the ideal text for undergraduate students beginning their Engineering studies. It will engage the undergraduate engineering student directly with what it means to be a contemporary engineer in Australia and New Zealand. There is a strong and practical emphasis on developing the range of communication and decision-making skills that are essential for tackling engineering problems. Throughout the text and its accompanying exercises and problems, students are encouraged to reflect on and thereby improve their learning practices."--provided by publisher.

Engineering & Computer Graphics Workbook Using SOLIDWORKS 2018 is an exercise-based workbook that uses step-by-step tutorials to cover the fundamentals of SOLIDWORKS 2018. The intended audience is college undergraduate engineering majors, but it could also be used in pre-college introductory engineering courses or by self learners. The text follows an educational paradigm that was researched and developed by the authors over many years. The paradigm is based on the concurrent engineering approach to engineering design in which the 3-D solid model data serves as the central hub for all aspects of the design process. The workbook systematically instructs the students to develop 3-D models using the rich tools afforded in SOLIDWORKS. The exercises then proceed to instruct the students on applications of the solid model to design analysis using finite elements, to assembly modeling and checking, to kinematic simulation, to rapid prototyping, and finally to projecting an engineering drawing. The workbook is ideally suited for courses in which a reverse engineering design project is assigned. This book contains clear and easy to understand instructions that enable the students to robustly learn the main features of SOLIDWORKS, with little or no instructor input.

The book starts with an historical overview of road vehicles. The first part deals with the forces exchanged between the vehicle and the road and the vehicle and the air with the aim of supplying the physical facts and the relevant mathematical models about the forces which dominate the dynamics of the vehicle. The second part deals with the dynamic behaviour of the vehicle in normal driving conditions with some extensions towards conditions encountered in high-speed racing driving. Contents: Short Historical Notes on Motor Vehicles Forces Acting between Road and Wheel Road Vehicle Aerodynamics Longitudinal Dynamics Handling of a Rigid Vehicle Motor Vehicle on Elastic Suspensions Road Accidents Readership: Mechanical engineers. keywords: Motor Vehicle Dynamics; Motor Vehicle Handling; Motor Vehicle Comfort; Motor Vehicle Stability; Motor Vehicle Simulation; Motor Vehicle Aerodynamics; Motor Vehicle Suspensions; Tires; Road Accidents; Vehicle-Driver Interaction "... the author provides an interesting and comprehensive treatment of a very complicated subject ... it would be a good addition to the bookshelf of any engineer with an interest in vehicle dynamics or general automotive technology." Applied Mechanics Reviews

Prev. ed: Construction methods, materials, and techniques, Clifton Park, N.Y., Thomas Delmar Learning, c2006.

A practical guide to research for architects and designers—now updated and expanded! From searching for the best glass to prevent glare to determining how clients might react to the color choice for restaurant walls, research is a crucial tool that architects must master in order to effectively address the technical, aesthetic, and behavioral issues that arise in their work. This book's unique coverage of research methods is specifically targeted to help professional designers and researchers better conduct and understand research. Part I explores basic research issues and concepts, and includes chapters on relating theory to method and design to research. Part II gives a comprehensive treatment of specific strategies for investigating built forms. In all, the book covers seven types of research, including historical, qualitative, correlational, experimental, simulation, logical argumentation, and case studies and mixed methods. Features new to this edition include: Strategies for investigation, practical examples, and resources for additional information A look at current trends and innovations in research Coverage of design studio-based research that shows

how strategies described in the book can be employed in real life A discussion of digital media and online research New and updated examples of research studies A new chapter on the relationship between design and research Architectural Research Methods is an essential reference for architecture students and researchers as well as architects, interior designers, landscape architects, and building product manufacturers.

"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"-- Presents the fundamentals of the gas turbine engine, including cycles, components, component matching, and environmental considerations.

This text presents the theoretical and practical aspects of analysis and design, complemented by numerous design examples.

Accuracy and consistency are essential to success in manufacturing, and the technology of precision measurement is fully explained and illustrated in this important book for both apprentice and practicing engineers.

Now in its fourth edition, this popular textbook provides students with a clear understanding of the nature of soil and its behaviour, offering an insight into the application of principles to engineering solutions. It clearly relates theory to practice using a wide-range of case studies, and dozens of worked examples to show students how to tackle specific problems. A comprehensive companion website offers worked solutions to the exercises in the book, video interviews with practising engineers and a lecturer testbank. With its comprehensive coverage and accessible writing style, this book is ideal for students of all levels on courses in geotechnical engineering, civil engineering, highway engineering, environmental engineering and environmental management, and is also a handy guide for practitioners. New to this Edition: - Brand-new case studies from around the world, demonstrating real-life situations and solutions - Over 100 worked examples, giving an insight into how engineers tackle specific problems - A companion website providing an integrated series of video interviews with practising engineers - An extensive online testbank of questions for lecturers to use alongside the book

* A classic reference providing the applications, on-the-job insights, codes and specifications, and direction needed to design HVAC systems * Covers residential, commercial, and industrial systems * NEW coverage of Energy Conservation and Digital Control Practice and greater emphasis on indoor air quality

The updated edition of the authoritative and comprehensive guide to construction practice The revised fourth edition of Barry's Advanced Construction of Buildings expands on the resource that has become a standard text on the construction of buildings. The fourth edition covers the construction of larger-scale buildings (primarily residential, commercial and industrial) constructed with load bearing frames in timber, concrete and steel; supported by chapters on offsite construction, piling, envelopes to framed buildings, fit-out and second fix, lifts and escalators, building pathology, upgrading and demolition. The author covers the functional and performance requirements of the main building elements as well as building efficiency and information on meeting the challenges of limiting the environmental impact of buildings. Each chapter includes new "at a glance" summaries that introduce the basic material giving a good understanding of the main points quickly and easily. The text is fully up to date with the latest building regulations and construction technology. This important resource: Covers design, technology, offsite construction, site assembly and environmental issues of larger-scale buildings including primarily residential, commercial and industrial buildings constructed with load bearing frames Highlights the concept of building efficiency, with better integration of the topics throughout the text Offers new "at a glance" summaries at the beginning of each chapter Is a companion to Barry's Introduction to Construction of Buildings, fourth edition Written for undergraduate students and those working towards similar NQF level 5 and 6 qualifications in building and construction, Barry's Advanced Construction of Buildings is a practical and highly illustrated guide to construction practice. It covers the materials and technologies involved in constructing larger scale buildings.

SUMMARY.

The Second Edition of this critically-acclaimed text continues the standard of excellence set in the first edition by providing a thorough introduction to the fundamentals of telecommunication networks without bogging you down in complex technical jargon or math. Although focusing on the basics, the book has been thoroughly updated with the latest advances in the field, including a new chapter on metropolitan area networks (MANs) and new sections on Mobile Fi, ZigBee and ultra-wideband. You'll learn which choices are now available to an organization, how to evaluate them and how to develop strategies that achieve the best balance among cost, security and performance factors for voice, data, and image communication.

Learn Basic Theory and Software Usage from a Single Volume Finite Element Modeling and Simulation with ANSYS Workbench combines finite element theory with real-world practice. Providing an introduction to finite element modeling and analysis for those with no prior experience, and written by authors with a combined experience of 30 years teaching the subject, this text presents FEM formulations integrated with relevant hands-on applications using ANSYS Workbench for finite element analysis (FEA). Incorporating the basic theories of FEA and the use of ANSYS Workbench in

the modeling and simulation of engineering problems, the book also establishes the FEM method as a powerful numerical tool in engineering design and analysis. Include FEA in Your Design and Analysis of Structures Using ANSYS Workbench The authors reveal the basic concepts in FEA using simple mechanics problems as examples, and provide a clear understanding of FEA principles, element behaviors, and solution procedures. They emphasize correct usage of FEA software, and techniques in FEA modeling and simulation. The material in the book discusses one-dimensional bar and beam elements, two-dimensional plane stress and plane strain elements, plate and shell elements, and three-dimensional solid elements in the analyses of structural stresses, vibrations and dynamics, thermal responses, fluid flows, optimizations, and failures. Contained in 12 chapters, the text introduces ANSYS Workbench through detailed examples and hands-on case studies, and includes homework problems and projects using ANSYS Workbench software that are provided at the end of each chapter. Covers solid mechanics and thermal/fluid FEA Contains ANSYS Workbench geometry input files for examples and case studies Includes two chapters devoted to modeling and solution techniques, design optimization, fatigue, and buckling failure analysis Provides modeling tips in case studies to provide readers an immediate opportunity to apply the skills they learn in a

problem-solving context Finite Element Modeling and Simulation with ANSYS Workbench benefits upper-level undergraduate students in all engineering disciplines, as well as researchers and practicing engineers who use the finite element method to analyze structures.

Provides an integrated and cohesive view of the product design process, covering materials, manufacturing, idea generation, computer-aided design, engineering functions, product types, and market research. This updated edition explores recent developments such as additive manufacture and crowd funding, and includes more consumer and lifestyle orientated products for a more product-based focus, supported by a range of new innovative examples and case studies from internationally-renown designers and studios. The second edition also features a supportive document map that helps to reveal the steps in product creation, new projects and activities for every chapter, and additional references and web sources to allow students to further explore the world of product design. Full of inspiring images covering a wide variety of product design examples, Richard Morris presents an engaging introduction to this sizeable topic that can be used as a useful guide to the processes involved in product design.