



Engineering

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ISBN : 978-3-642-20950-5

Michaelides, Efstathios E (Stathis), Texas Christian University, Fort Worth, TX, USA

Alternative Energy Sources

- Includes two chapters on nuclear energy by fission and one on fusion energy
- Contains detailed chapter on "energy storage"
- Assumes minimum prior knowledge on behalf of the reader and imparts some of the pre-requisite knowledge

Alternative Energy Sources is designed to give the reader, a clear view of the role each form of alternative energy may play in supplying the energy needs of the human society in the near future (20-50 years). The two first chapters on "energy demand and supply" and "environmental effects," set the tone as to why alternative energy is essential for the future. The third chapter gives the laws of energy conversion processes, as well as the limitations of converting one energy form to another. The section on exergy gives a quantitative background on the capability/potential of each energy source to produce power. The fourth, fifth and sixth ...

Contents

Energy Demand and Supply.- Environmental effects of energy use – The laws of thermodynamics.- Nuclear energy.- Nuclear Power Plants.- Fusion energy.- Wind Power.- Geothermal Energy.- Solar Energy.- Biomass/biofuels.- Other renewable sources of energy.- Energy storage.- Energy Conservation.- Economics of Energy Projects.

Fields of Interest

Renewable and Green Energy; Renewable and Green Energy; Sustainable Development; Energy Systems

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2012,XVIII, 462 p.(Green Energy and Technology) Hardcover

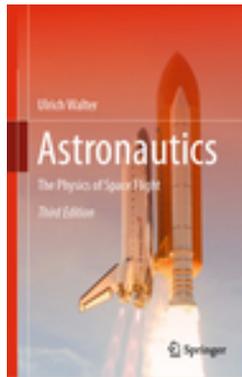
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-319-74372-1

Walter, Ulrich, Technical University of Munich, Garching, Germany

Astronautics

The Physics of Space Flight

- The only textbook on the market dealing comprehensively with the physics of spaceflight
- Based on the author's extensive teaching and his work with students
- Provides problems and solutions covered in no other textbook (relativistic flight, new solution to Lambert problem)

This introductory text covers all the key concepts, relationships, and ideas behind spaceflight and is the perfect companion for students pursuing courses on or related to astronautics. As a crew member of the STS-55 Space Shuttle mission and a full professor of astronautics at the Technical University of Munich, Ulrich Walter is an acknowledged expert in the field. This book is based on his extensive teaching and work with students, and the text is backed up by numerous examples drawn from his own experience. With its end-of-chapter examples and problems, this work is suitable for graduate level or even undergraduate courses in spaceflight, ...

Contents

Rocket Fundamentals.- Rocket Flight.- Rocket Staging.- Thermal Propulsion.- Electric Propulsion.- Atmospheric and Ascent Flight.- Orbits.- Orbital Maneuvering.- Interplanetary

Flight.- Planetary Entry.- Three-Body Problem.- Orbit Perturbations.- Reference Frames.- Orbit Determination.- Spacecraft Attitude Dynamics.-Thermal Radiation Physics and Modeling.

Fields of Interest

Aerospace Technology and Astronautics; Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics); Classical Mechanics; Classical and Quantum Gravitation, Relativity Theory

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

3rd ed. 2018,XXXVI, 828 p. 938 illus., 79 illus. in color. Hardcover

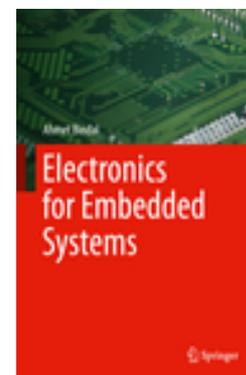
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-319-39437-4

Bindal, Ahmet, San Jose State University, San Jose, CA, USA

Electronics for Embedded Systems

- Provides semester-length textbook for students in computer and electrical engineering, covering electronics for embedded systems
- Emphasizes fundamentals of signal integrity, diode and bipolar transistor circuits, introduction to new and old logic families, operational amplifiers for conditioning sensor signals, data converter designs, and some power electronics

- Includes extensive exercises for each chapter; solutions and Powerpoint slides for instructors

This book provides semester-length coverage of electronics for embedded systems, covering most common analog and digital circuit-related issues encountered while designing embedded system hardware. It is written for students and young professionals who have basic circuit theory background and want to learn more about passive circuits, diode and bipolar transistor circuits, the state-of-the-art CMOS logic family and its interface with older logic families such as TTL, sensors and sensor physics, operational amplifier circuits to condition sensor signals, data converters and various circuits used in electro-mechanical device control in ...

Contents

Fundamentals of Passive Circuit Analysis.- Diode and Bipolar Transistor Circuits.- MOS Transistors and CMOS Circuits.- TTL Logic and CMOS-TTL Interface.- Physics of Sensors.- Operational Amplifiers and Circuits.- Data Converters.- Front-End Electronics for Embedded Systems.- Review of Combinational and Sequential Logic Circuits and Design.

Fields of Interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

1st ed. 2017,XIII, 298 p. 357 illus. Hardcover

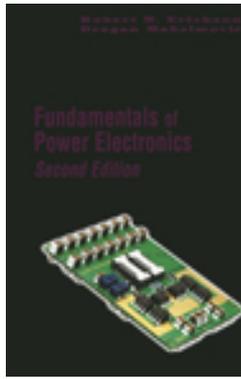
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-0-7923-7270-7

Erickson, Robert W., Maksimovic, Dragan, University of Colorado at Boulder Electrical and Computer Engineering, Boulder, CO, USA

Fundamentals of Power Electronics

Fundamentals of Power Electronics, Second Edition, is an up-to-date and authoritative text and reference book on power electronics. This new edition retains the original objective and philosophy of focusing on the fundamental principles, models, and technical requirements needed for designing practical power electronic systems while adding a wealth of new material. Improved features of this new edition include: A new chapter on input filters, showing how to design single and multiple section filters; Major revisions of material on averaged switch modeling, low-harmonic rectifiers, and the chapter on AC modeling of the discontinuous ...

Contents

Converters in Equilibrium.- Principles of Steady-State Converter Analysis.- Steady-State Equivalent Circuit Modeling, Losses, and Efficiency.- Switch Realization.- The Discontinuous Conduction Mode.- Converter Circuits.- Converter Dynamics and Control.- AC Equivalent Circuit Modeling.- Converter Transfer Functions.- Controller Design.- Input Filter Design.- AC and DC Equivalent Circuit Modeling of the Discontinuous Conduction Mode.- Current Programmed Control.- Magnetics.- Basic Magnetics Theory.- Inductor Design.- Transformer Design.- Modern Rectifiers and Power System Harmonics.- Power and Harmonics in Nonsinusoidal Systems.- ...

Fields of Interest

Circuits and Systems; Energy, general; Electronics and Microelectronics, Instrumentation; Energy Systems

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2nd ed. 2001,XXI, 883 p. Hardcover

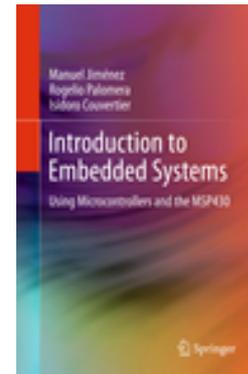
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-1-4614-3142-8

Jiménez, M., Palomera, R., Couvertier, I., University of Puerto Rico at Mayagüez, Mayagüez, USA

Introduction to Embedded Systems

Using Microcontrollers and the MSP430

- Provides textbook coverage of embedded systems, with an emphasis on the practical use of microcontrollers
- Covers embedded software fundamentals, including software planning, assembly language, and C-language program development
- Includes detailed treatment of embedded hardware fundamentals, discussing structure, interfacing and configuration of hardware building blocks

This textbook serves as an introduction to the subject of embedded systems design, using microcontrollers as core components. It develops concepts from the ground up, covering the development of embedded systems technology, architectural and organizational aspects of controllers and systems, processor models, and peripheral devices. Since microprocessor-based embedded systems tightly blend hardware and software components in a single application, the book also introduces the subjects of data representation formats, data operations, and programming styles. The practical component of the book is tailored around the architecture of a widely ...

Contents

Introduction.- Number Systems and Data Formats.- Microcomputer Organization.- Assembly Language Programming.- Embedded Programming Using C.- Fundamentals of Interfacing.- Embedded Peripherals.- External World Interfaces.- Principles of Serial Communication.- The Analog Signal Chain.-

Fields of Interest

Circuits and Systems; Processor Architectures; Electronics and Microelectronics, Instrumentation

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

2014,XXIII, 648 p. 348 illus., 102 illus. in color. With online files/update. Hardcover

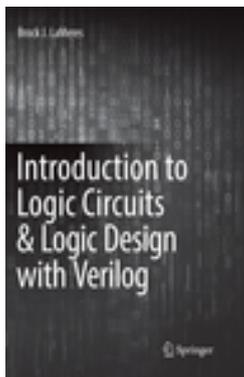
Medium Type

Book w. online files / update

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-319-85265-2

LaMeres, Brock J., Montana State University, Bozeman, MT, USA

Introduction to Logic Circuits & Logic Design with Verilog

- Written the way the material is taught, enabling a bottom-up approach to learning which culminates with a high-level of learning, with a solid foundation
- Emphasizes examples from which students can learn: contains a solved example for nearly every section in the book
- Includes more than 600 exercise problems,

as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook for courses in Digital Systems Design introduces students to the fundamental hardware used in modern computers. Coverage includes both the classical approach to digital system design (i. e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). Using this textbook enables readers to design digital systems using the modern HDL approach, but they have a broad foundation of knowledge of the underlying hardware and theory of their designs. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds ...

Contents

Introduction – Analog Vs. Digital.- Number Systems.- Digital Circuitry & Interfacing.- Combinational Logic Design.- Verilog (Part 1).- MSI Logic.- Sequential Logic Design.- Verilog (Part 2).- Behavioral Modeling of Sequential Logic.- Memory.- Programmable Logic.- Arithmetic Circuits.- Computer System Design.- Appendix A: List of Worked Examples.

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

Softcover reprint of the original 1st ed. 2017,XVI, 459 p. 476 illus., 426 illus. in color. Softcover

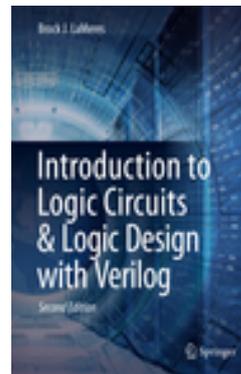
Medium Type

Book (Paperback Initiative)

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-030-13604-8

LaMeres, Brock J., Montana State University, Bozeman, MT, USA

Introduction to Logic Circuits & Logic Design with Verilog

- Written the way the material is taught, enabling a bottom-up approach to learning which culminates with a high-level of learning, with a solid foundation
- Emphasizes examples from which students can learn: contains a solved example for nearly every section in the book
- Includes more than 1000 exercise problems, as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook for courses in Digital Systems Design introduces students to the fundamental hardware used in modern computers. Coverage includes both the classical approach to digital system design (i. e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). Using this textbook enables readers to design digital systems using the modern HDL approach, but they have a broad foundation of knowledge of the underlying hardware and theory of their designs. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds ...

Contents

Introduction – Analog Vs. Digital.- Number Systems.- Digital Circuitry & Interfacing.- Combinational Logic Design.- Verilog (Part 1).- MSI Logic.- Sequential Logic Design.- Verilog (Part 2).- Behavioral Modeling of Sequential Logic.- Memory.- Programmable Logic.- Arithmetic Circuits.- Computer System Design.- Appendix A: List of Worked Examples.

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

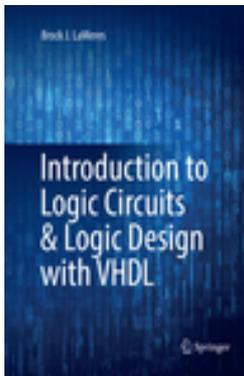
2nd ed. 2019,XVI, 485 p. 496 illus., 445 illus. in color. Hardcover

Medium Type

Book

Imprint

Springer

[Order Quantity](#)

ISBN : 978-3-319-81699-9

LaMeres, Brock J., Montana State University Dept of ECE, Bozeman, MT, USA

Introduction to Logic Circuits & Logic Design with VHDL

- Written the way the material is taught, enabling a bottom-up approach to learning which culminates with a high-level of learning, with a solid foundation
- Emphasizes examples from which students can learn: contains a solved example for nearly every section in the book
- Includes more than 600 exercise problems, as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook introduces readers to the fundamental hardware used in modern computers. The only pre-requisite is algebra, so it can be taken by college freshman or sophomore students or even used in Advanced Placement courses in high school. This book presents both the classical approach to digital system design (i.e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). This textbook enables readers to design digital systems using the modern HDL approach while ensuring they have a solid foundation of

knowledge of the underlying hardware and theory of their designs. This book is ...

Contents

Introduction.- Analog Vs. Digital.- Number Systems.- Digital Circuitry & Interfacing.- Combinational Logic Design.- VHDL (Part 1).- MSI Logic.- Sequential Logic Design.- VHDL (Part 2).- Behavioral Modeling Of Sequential Logic.- Memory.- Programmable Logic.- Arithmetic Circuits.- Computer System Design.

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

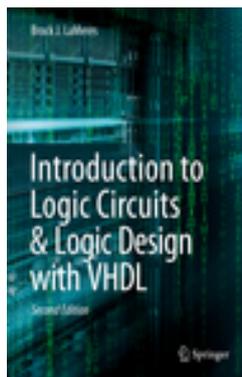
Softcover reprint of the original 1st ed. 2017,XVI, 475 p. 485 illus., 427 illus. in color. Softcover

Medium Type

Book (Paperback Initiative)

Imprint

Springer

[Order Quantity](#)

ISBN : 978-3-030-12488-5

LaMeres, Brock J., Montana State University, Bozeman, MT, USA

Introduction to Logic Circuits & Logic Design with VHDL

- Written the way the material is taught, enabling a bottom-up approach to learning which culminates with a high-level of learning, with a solid foundation
- Emphasizes examples from which students

can learn: contains a solved example for nearly every section in the book

- Includes more than 1000 exercise problems, as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook introduces readers to the fundamental hardware used in modern computers. The only pre-requisite is algebra, so it can be taken by college freshman or sophomore students or even used in Advanced Placement courses in high school. This book presents both the classical approach to digital system design (i.e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). This textbook enables readers to design digital systems using the modern HDL approach while ensuring they have a solid foundation of knowledge of the underlying hardware and theory of their designs. This book is ...

Contents

Introduction.- Analog Vs. Digital.- Number Systems.- Digital Circuitry & Interfacing.- Combinational Logic Design.- VHDL (Part 1).- MSI Logic.- Sequential Logic Design.- VHDL (Part 2).- Behavioral Modeling Of Sequential Logic.- Memory.- Programmable Logic.- Arithmetic Circuits.- Computer System Design.

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

2nd ed. 2019,XVI, 499 p. 505 illus., 454 illus. in color. Hardcover

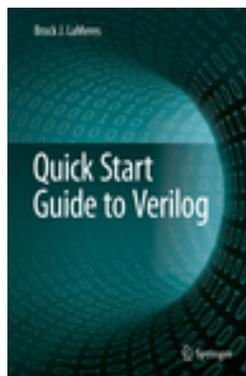
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-030-10551-8

LaMeres, Brock J., Montana State University,
Bozeman, MT, USA

Quick Start Guide to Verilog

- Written the way the material is taught, enabling a bottom-up approach to learning which culminates with a high-level of learning, with a solid foundation
- Emphasizes examples from which students can learn: contains a solved example for nearly every section in the book
- Includes more than 400 exercise problems, as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook provides a starter's guide to Verilog, to be used in conjunction with a one-semester course in Digital Systems Design, or on its own for readers who only need an introduction to the language. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds foundational knowledge before moving onto advanced topics. The author has designed the presentation with learning goals and assessment at its core. Each section addresses a specific learning outcome that the student should be able to "do" after its completion. The concept checks and exercise problems ...

Contents

The Modern Digital Design Flow.- Verilog Constructs.- Modeling Concurrent Functionality in Verilog.- Structural Design and Hierarchy.- Modeling Sequential Functionality.- Test Benches.- Modeling Sequential Storage and Registers.- Modeling Finite State Machines.- Modeling Counters.- Modeling Memory.- Computer System Design.

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

1st ed. 2019,XII, 190 p. 159 illus., 128 illus. in color. Hardcover

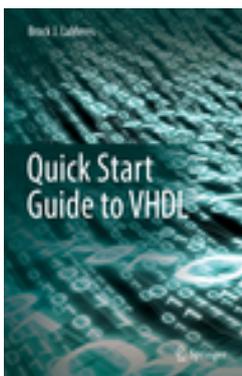
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-030-04515-9

LaMeres, Brock J., Montana State University,
Bozeman, MT, USA

Quick Start Guide to VHDL

- A comprehensive coverage of the basic capability of VHDL
- Emphasizes examples from which students can learn: contains a solved example for nearly every section in the book
- Includes more than 400 exercise problems, as well as concept check questions for each section, tied directly to specific learning outcomes

This textbook provides a starter's guide to VHDL. This book can be used in conjunction with a one-semester course in Digital Systems Design or on its own for designers who only need an introduction to the language. This book is designed to provide a bottoms-up approach to learning the VHDL language. This design supports a course in which foundational knowledge is covered before moving into advanced topics. However, this design also supports use as a reference manual. The author has designed the presentation with learning goals and assessment at its core. Each section addresses a specific learning outcome that the student should be able to ...

Contents

The Modern Digital Design Flow.- VHDL Constructs.- Modeling Concurrent Functionality in VHDL.- Structural Design &

Hierarchy.- Modeling Sequential Functionality.- Packages.- Test Benches.- Modeling Sequential Storage & Registers.- Modeling Finite State Machines.- Modeling Counters.- Modeling Memory.- Computer System Design.- Appendix A: List of Worked Examples.-

Fields of Interest

Circuits and Systems; Processor Architectures; Logic Design

Content Level

Lower undergraduate

Product category

Undergraduate textbook

Available

Bibliography

1st ed. 2019,XII, 212 p. 161 illus., 139 illus. in color. Hardcover

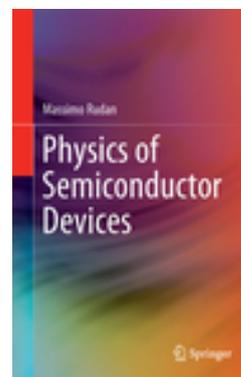
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-1-4939-4699-0

Rudan, Massimo, University of Bologna, Bologna,
Italy

Physics of Semiconductor Devices

- Provides comprehensive guide for practitioners and beginners, describing the physics of semiconductors from fundamentals to applications
- Proceeds from first principles to description of actual devices' behavior
- Includes mathematical derivations and explicit calculations, without being wordy

This book describes the basic physics of semiconductors, including the hierarchy of

transport models, and connects the theory with the functioning of actual semiconductor devices. Details are worked out carefully and derived from the basic physics, while keeping the internal coherence of the concepts and explaining various levels of approximation. Examples are based on silicon due to its industrial importance. Several chapters are included that provide the reader with the quantum-mechanical concepts necessary for understanding the transport properties of crystals. The behavior of crystals incorporating a position-dependent impurity ...

Contents

Part I A Review of Analytical Mechanics and Electromagnetism.- Analytical Mechanics.- Coordinate Transformations and Invariance Properties.- Applications of the Concepts of Analytical Mechanics.- Electromagnetism.- Applications of the Concepts of Electromagnetism.- Part II Introductory Concepts to Statistical and Quantum Mechanics.- Classical Distribution Function and Transport Equation.- From Classical Mechanics to Quantum Mechanics.- Time-Independent Schrodinger Equation.- Time-Dependent Schrodinger Equation.- General Methods of Quantum Mechanics.- Part III Applications of the Schrodinger Equation.- Elementary Cases.- Cases Related to the ...

Fields of Interest

Circuits and Systems; Semiconductors; Electronics and Microelectronics, Instrumentation

Content Level

Professional/practitioner

Product category

Undergraduate textbook

Available

Bibliography

Softcover reprint of the original 1st ed. 2015,XXIII, 649 p. 158 illus. Softcover

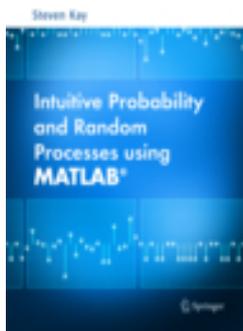
Medium Type

Book (Paperback Initiative)

Imprint

Springer

Order Quantity



ISBN : 978-0-387-24157-9

Kay, Steven, University of Rhode Island Dept. of Electrical Engineering, Kingston, RI, USA

Intuitive Probability and Random Processes using MATLAB®

- Features heavy reliance on computer simulation for illustration and student exercises
- Incorporates MATLAB programs and code segments
- Discusses discrete random variables followed by continuous random variables to minimize confusion

Intuitive Probability and Random Processes using MATLAB® is an introduction to probability and random processes that merges theory with practice. Based on the author's belief that only "hands-on" experience with the material can promote intuitive understanding, the approach is to motivate the need for theory using MATLAB examples, followed by theory and analysis, and finally descriptions of "real-world" examples to acquaint the reader with a wide variety of applications. The latter is intended to answer the usual question "Why do we have to study this?" Other salient features are: **heavy reliance on computer simulation for illustration and ...**

Contents

Computer Simulation.- Basic Probability.- Conditional Probability.- Discrete Random Variables.- Expected Values for Discrete Random Variables.- Multiple Discrete Random Variables.- Conditional Probability Mass Functions.- Discrete N-Dimensional Random Variables.- Continuous Random Variables.- Expected Values for Continuous Random Variables.- Multiple Continuous Random Variables.- Conditional Probability Density Functions.- Continuous N-Dimensional Random Variables.- Probability and Moment Approximations Using Limit Theorems.- Basic Random Processes.- Wide Sense Stationary Random Processes.- Linear Systems and Wide Sense Stationary Random ...

Fields of Interest

Communications Engineering, Networks; Mathematical Software; Mathematical and Computational Engineering; Signal, Image and Speech Processing; Probability Theory and Stochastic Processes; Fourier Analysis

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2006,XVIII, 834 p. 294 illus. Hardcover

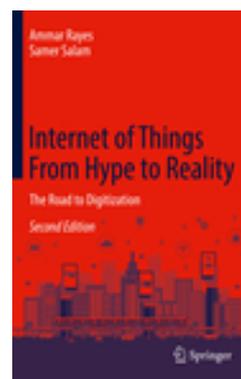
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-99515-1

Rayes, Ammar, Salam, Samer, San Jose, CA, USA

Internet of Things From Hype to Reality

The Road to Digitization

- Provides a comprehensive IoT network and management overview with emphasis on gaps, opportunities, and open research problems
- Outlines requirements for IoT including smart sensors, networks, applications, and an IoT platform to securely collect required information to monitor the services and take action when required
- Presents a host of classroom materials including Q&A, PPT slides, exercises, and more

This textbook presents an end-to-end Internet of Things (IoT) architecture that comprises of devices, network, compute, storage, platform, applications along with

management and security components with focus on the missing functionality in the current state of the art. As with the first edition, it is organized into six main parts: an IoT reference model; Fog computing and the drivers; IoT management and applications ranging from smart homes to manufacturing and energy conservation solutions; Smart Services in IoT; IoT standards; and case studies. The textbook edition features a new chapter entitled The Blockchain in IoT, updates based on ...

Contents

1. IoT Overview.- 2. The Internet in IoT - OSI, TCP/IP, IPv4, IPv6 and Internet Routing.- 3. The Things in IoT: Sensors and Actuators.- 4. IoT Requirements for Networking Protocols.- 5. IoT Protocol Stack: Layered View.- 6. Fog Computing.- 7. IoT Services Platform: Functions and Requirements.- 8. Internet of Things Security and Privacy.- 9. IoT Vertical Markets and Connected Ecosystems.- 10. Blockchain in IoT.- 11. Industry Organizations and Standards Landscape.- 12. The Role of Open Source in IoT.- Appendix A: Glossary.- Appendix B: Examples of IoT Projects.

Fields of Interest

Communications Engineering, Networks; Electronics and Microelectronics, Instrumentation; Information Systems Applications (incl. Internet); User Interfaces and Human Computer Interaction

Content Level

Upper undergraduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2nd ed. 2019,XXX, 373 p. 128 illus., 126 illus. in color. Hardcover

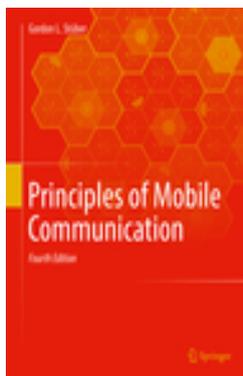
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-55614-7

Stüber, Gordon L., Georgia Institute of Technology, Atlanta, GA, USA

Principles of Mobile Communication

- Provides an updated textbook for university graduate-level courses teaching mobile communications or wireless communication
- Offers a rigorous study in the fundamentals and principles of wireless communication, with homework problems throughout
- Includes new content on 4G cellular systems, 5G cellular outlook, bandpass signals and systems, and polarization among many other topics and a new chapter on channel assignment techniques

This mathematically rigorous overview of physical layer wireless communications is now in a 4th, fully revised and updated edition. The new edition features new content on 4G cellular systems, 5G cellular outlook, bandpass signals and systems, and polarization, among many other topics, in addition to a new chapters on channel assignment techniques. Along with coverage of fundamentals and basic principles sufficient for novice students, the volume includes finer details that satisfy the requirements of graduate students aiming to conduct in-depth research. The book begins with a survey of the field, introducing issues relevant to wireless ...

Contents

Introduction.- Propagation Modeling.- Co-channel Interference.- Modulation and Power Spectrum.- Detection of Known Signals in Noise.- Multi-antenna Techniques.- Time Domain Equalization and Interference Cancellation.- Error Control Coding.- Spread Spectrum Techniques.- Multi-carrier Techniques.- Frequency Planning.- CDMA Cellular Networks.- Radio Resource Management.- Channel Assignment Techniques.- Probability and Random Processes.- Conclusion.

Fields of Interest

Communications Engineering, Networks; Signal, Image and Speech Processing; Input/Output and Data Communications

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

4th ed. 2017,XXII, 717 p. 409 illus., 7 illus. in color. Hardcover

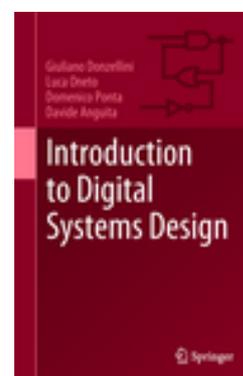
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-92803-6

Donzellini, G., Oneto, L., Ponta, D., Anguita, D., Università degli Studi di Genova, Genoa, Italy

Introduction to Digital Systems Design

- Includes a large number of worked examples and exercises with solutions
- Shows that all the examples and exercises are also available in digital format and can be simulated with the software Deeds
- Does not require any prior knowledge of electronics or programming

This book has been designed for a first course on digital design for engineering and computer science students. It offers an extensive introduction on fundamental theories, from Boolean algebra and binary arithmetic to sequential networks and finite state machines, together with the essential tools to design and simulate systems composed of a controller and a datapath. The numerous worked examples and solved exercises allow a better understanding and more effective learning. All of the examples and exercises can be run on the Deeds software, freely available online on a webpage developed and maintained by the

authors. Thanks to the ...

Contents

Boolean algebra and combinational logic.- Combinational Network Design.- Numerical Systems and Binary Arithmetic.- Complements in Combinational Network Design.- Introduction to Sequential Networks.- Flip-flop Based Synchronous Networks.- Sequential Networks as Finite State Machines.- The Finite State Machine as System Controller.- Introduction to FPGA and HDL design.

Fields of Interest

Electrical Engineering; Logic Design; Algorithms

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

1st ed. 2019,XXIII, 536 p. 728 illus., 704 illus. in color. Hardcover

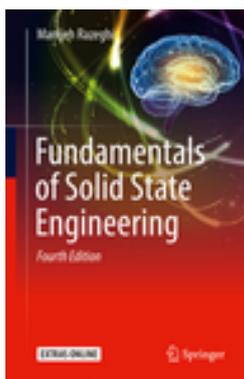
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-75707-0

Razeghi, Manijeh, Northwestern University, Evanston, IL, USA

Fundamentals of Solid State Engineering

• Enriches the text's multidisciplinary introduction to quantum mechanics, solid state physics, and advanced devices with coverage of two-dimensional semiconductors, thermal properties of

crystals, and new chapters on systems for sustainable energy

- Maximizes students' real-world knowledge with the most up to date developments in semiconductor physics and nano-engineering
- Reinforces grasp of concepts presented with end of chapter problems

The fourth edition of this class-tested, multi-disciplinary introduction to solid state engineering adds dozens of revised and updated sections and problems, as well as three new chapters on solar energy harvesting, thermal and photothermal energy harvesting, and photo-thermovoltaics. Combining concepts from physics, chemistry, electrical engineering, materials science, and mechanical engineering, Professor Razeghi describes electron-electron and electron-phonon interactions, the Kane effective mass method, the carbon atom, thermal properties of crystals, the harmonic oscillator, the hydrogen atom, the quantum mechanical description of ...

Contents

Electronic Structure of Atoms.- Introduction: the carbon atom.- Crystalline Properties of Solids.- Introduction to Quantum Mechanics.- Electrons and Energy Band Structures in Crystals.- Phonons and thermal properties.- Equilibrium Charge Carrier Statistics in Semiconductors.- Non-Equilibrium Electrical Properties of Semiconductors.- Semiconductor p-n and Metal-Semiconductor Junctions.- Optical Properties of Semiconductors.- Solar Energy Harvesting.- Thermal and Photothermal energy harvesting.- Photo-thermovoltaics.- Electron-Electron Interactions: Screening.- Semiconductor Heterostructures and Low-Dimensional Quantum Structures.- Quantum ...

Fields of Interest

Electronics and Microelectronics, Instrumentation; Optical and Electronic Materials; Solid State Physics; Spectroscopy and Microscopy; Nanotechnology

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

4th ed. 2019,XXXI, 689 p. 399 illus., 139 illus. in color. Hardcover

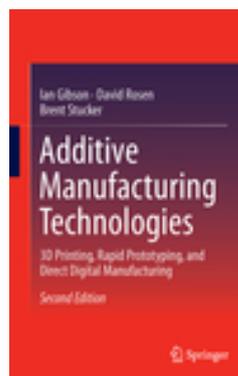
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-1-4939-2112-6

Gibson, I., Rosen, D., Stucker, B., School of Engineering, Deakin University, , VIC, Australia

Additive Manufacturing Technologies

3D Printing, Rapid Prototyping, and Direct Digital Manufacturing

- Reflects recent developments and trends and adheres to the ASTM, SI and other standards
- Includes chapters on automotive technology, aerospace technology and low-cost AM technologies
- Provides a broad range of technical questions to ensure comprehensive understanding of the concepts covered

This book covers in detail the various aspects of joining materials to form parts. A conceptual overview of rapid prototyping and layered manufacturing is given, beginning with the fundamentals so that readers can get up to speed quickly. Unusual and emerging applications such as micro-scale manufacturing, medical applications, aerospace, and rapid manufacturing are also discussed. This book provides a comprehensive overview of rapid prototyping technologies as well as support technologies such as software systems, vacuum casting, investment casting, plating, infiltration and other systems. This book also: Reflects recent developments and ...

Contents

Introduction and basic principles.- Development of AM technology.- Generalized AM process chain.- Photopolymerisation processes.- Powder bed fusion processes.- Extrusion based systems.- Printing processes.- Sheet lamination processes.- Beam deposition processes.- Direct write technologies.- Low-cost AM technologies.- Guidelines for process selection.- Post-processing.- Software issues for AM.- AM Standards.- Multiple materials in AM.- Direct

Digital Manufacturing.- Design for AM.- Rapid tooling.- Medical applications for AM.- Aerospace applications for AM.- Automotive applications for AM.- Business opportunities and future directions.

Fields of Interest

Engineering Design; Manufacturing, Machines, Tools, Processes; Nanotechnology

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2nd ed. 2015,XXI, 498 p. 224 illus., 108 illus. in color. Hardcover

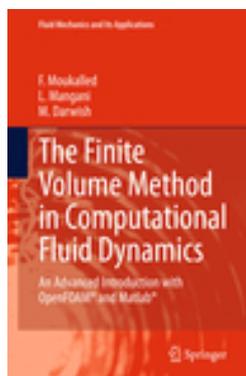
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-16873-9

Moukalled, F., Mangani, L., Darwish, M., American University of Beirut, Beirut, Lebanon

The Finite Volume Method in Computational Fluid Dynamics

An Advanced Introduction with OpenFOAM® and Matlab

- Covers the FVM method in detail, including implementation of boundary conditions and two-equation turbulence models
- Keynote presentations and exercise solutions available for instructors
- Relates FVM algorithms and methods to uFVM and OpenFOAM® implementations

This textbook explores both the theoretical foundation of the Finite Volume Method

(FVM) and its applications in Computational Fluid Dynamics (CFD). Readers will discover a thorough explanation of the FVM numerics and algorithms used for the simulation of incompressible and compressible fluid flows, along with a detailed examination of the components needed for the development of a collocated unstructured pressure-based CFD solver. Two particular CFD codes are explored. The first is uFVM, a three-dimensional unstructured pressure-based finite volume academic CFD code, implemented within Matlab. The second is OpenFOAM®, an open source ...

Contents

Foundation.- 1 Introduction.- 2 Review of Vector Calculus.- 3 Mathematical Description of Physical Phenomena.- 4 The Discretization Process.- 5 The Finite Volume Method.- 6 The Finite Volume Mesh.- 7 The Finite Volume Mesh in OpenFOAM® and uFVM.- Discretization.- 8 Spatial Discretization: The Diffusion Term.- 9 Gradient Computation.- 10 Solving the System of Algebraic Equations.- 11 Discretization of the Convection Term.- 12 High Resolution Schemes.- 13 Temporal Discretization: The Transient Term.- 14 Discretization of the Source Term, Relaxation, and Other Details.- Algorithms.- 15 Fluid Flow Computation: Incompressible Flows.- 16 Fluid ...

Fields of Interest

Engineering Fluid Dynamics; Computational Science and Engineering; Numerical and Computational Physics, Simulation; Fluid- and Aerodynamics

Content Level

Research

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

1st ed. 2015,XXIII, 791 p. 297 illus., 242 illus. in color.(Fluid Mechanics and Its Applications, Volume 113) Hardcover

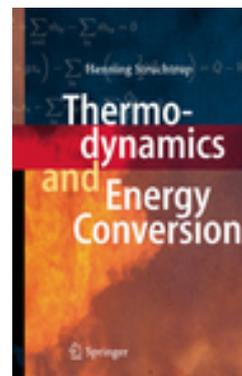
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-662-43714-8

Struchtrup, Henning, University of Victoria Dept. Mechanical Engineering, Victoria, BC, Canada

Thermodynamics and Energy Conversion

- Self-contained Textbook for undergraduate and graduate students in engineering, physics and chemistry
- Unique and complete collection of thermodynamics, advanced thermodynamics and energy conversion
- Includes problems, exercises and a multitude real-world examples appropriate also for self-studies

This textbook gives a thorough treatment of engineering thermodynamics with applications to classical and modern energy conversion devices. Some emphasis lies on the description of irreversible processes, such as friction, heat transfer and mixing and the evaluation of the related work losses. Better use of resources requires high efficiencies therefore the reduction of irreversible losses should be seen as one of the main goals of a thermal engineer. This book provides the necessary tools. Topics include: car and aircraft engines, including Otto, Diesel and Atkinson cycles, by-pass turbofan engines, ramjet and scramjet; steam and gas power ...

Contents

Introduction: Why Thermodynamics?.- Systems, States, and Processes.- The First Law of Thermodynamics.- The Second Law of Thermodynamics.- Energy Conversion and the Second Law.- Properties and Property Relations.- Reversible Processes in Closed Systems.- Closed System Cycles.- Open Systems.- Basic Open System Cycles.- Efficiencies and Irreversible Losses.- Vapor engines.- Gas engines.- Compressible flow: Nozzles and Diffusers.- Transient and inhomogeneous processes in open systems.- More on property relations.- Thermodynamic equilibrium.- Mixtures.- Psychrometrics.- The Chemical Potential.- Mixing and Separation.- Phase Equilibrium in ...

Fields of Interest

Engineering Thermodynamics, Heat and Mass Transfer; Thermodynamics; Industrial

Chemistry/Chemical Engineering;
Engineering Fluid Dynamics; Classical and
Continuum Physics; Energy Systems

Content Level

Research

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2014, XVIII, 597 p. 211 illus., 6 illus. in color.
Hardcover

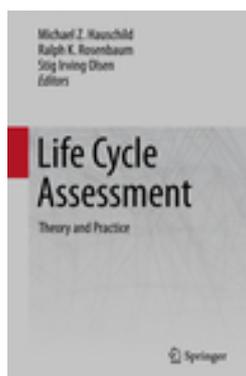
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-56474-6

Hauschild, M.Z., Rosenbaum, R.K., Olsen, S.I. (Eds.),
Technical University of Denmark, Kongens Lyngby,
Denmark

Life Cycle Assessment

Theory and Practice

- Provides a comprehensive and pedagogic introduction to LCA methodology
- Helps the reader understand the role of LCA in a future sustainable economy
- Repository of LCA information covering a broad range of application fields

This book is a uniquely pedagogical while still comprehensive state-of-the-art description of LCA-methodology and its broad range of applications. The five parts of the book conveniently provide: I) the history and context of Life Cycle Assessment (LCA) with its central role as quantitative and scientifically-based tool supporting society's transitioning towards a sustainable economy; II) all there is to know about LCA methodology illustrated by a red-thread

example which evolves as the reader advances; III) a wealth of information on a broad range of LCA applications with dedicated chapters on policy development, prospective LCA, life cycle ...

Contents

Introduction.- Methodology.- Applications.- LCA Cookbook.

Fields of Interest

Manufacturing, Machines, Tools, Processes;
Sustainable Development; Renewable and
Green Energy; Sustainability Management;
Manufacturing, Machines, Tools, Processes

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

1st ed. 2018, XX, 1216 p. 223 illus., 114 illus. in
color. Hardcover

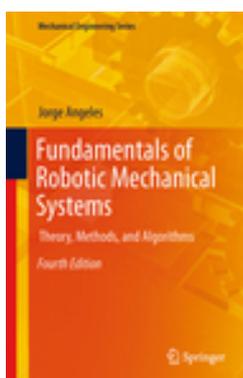
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-3-319-01850-8

Angeles, Jorge, McGill University, Montreal, Canada

Fundamentals of Robotic Mechanical Systems

Theory, Methods, and Algorithms

- Includes additional examples and exercises that serve as a guide to various, current dilemmas in robotics
- Features modern images of new robot models
- Revised and rewritten so that it is more

complete and easy to understand for
beginners to the world of robotics

The 4th edition includes updated and additional examples and exercises on the core fundamental concepts of mechanics, robots, and kinematics of serial robots. New images of CAD models and physical robots help to motivate concepts being introduced. Each chapter of the book can be read independently of others as it addresses a separate issue in robotics.

Contents

An Overview of Robotic Mechanical Systems.-
Mathematical Background.- Fundamentals of
Rigid-Body Mechanics.- Geometry of
Decoupled Serial Robots.- Kinetostatics of
Serial Robots.- Trajectory Planning: Pick-and-
Place Operations.- Dynamics of Serial Robotic
Manipulators.- Special Topics in Rigid-Body
Kinematics.- Geometry of General Serial
Robots.- Kinematics of Alternative Robotic
Mechanical Systems.- Trajectory Planning:
Continuous-Path Operations.- Dynamics of
Complete Robotic Mechanical Systems.-
Kinematics of Rotations: A Summary.-
Numerical Equation-Solving.

Fields of Interest

Mechanical Engineering; Robotics and
Automation

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

4th ed. 2014, XXIII, 589 p. 160 illus., 18 illus. in
color. (Mechanical Engineering Series, Volume
124) Hardcover

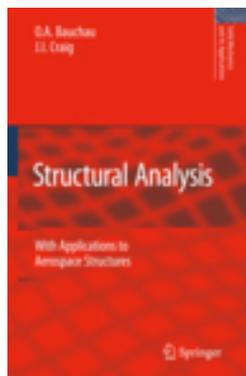
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-90-481-2515-9

Bauchau, O. A., Craig, J.L., Georgia Institute of Technology School of Aerospace Engineering, Atlanta, GA, USA

Structural Analysis

With Applications to Aerospace Structures

- A unified treatment of the various topics
- Exhaustive coverage with unified approach
- Extensive selection of problems with computer applications

The authors and their colleagues developed this text over many years, teaching undergraduate and graduate courses in structural analysis courses at the Daniel Guggenheim School of Aerospace Engineering of the Georgia Institute of Technology. The emphasis is on clarity and unity in the presentation of basic structural analysis concepts and methods. The equations of linear elasticity and basic constitutive behaviour of isotropic and composite materials are reviewed. The text focuses on the analysis of practical structural components including bars, beams and plates. Particular attention is devoted to the analysis of thin-walled beams under ...

Contents

Part I Basic tools and concepts; 1 Basic Equations of Linear Elasticity .1.1 The concept of stress; 1.1.1 The state of stress at a point; 1.1.2 Volume equilibrium equations; 1.1.3 Surface equilibrium equations; 1.2 Analysis of the state of stress at a point; 1.2.1 Stress components acting on an arbitrary face; 1.2.2 Principal stresses; 1.2.3 Rotation of stresses; 1.2.4 Problems; 1.3 The state of plane stress; 1.3.1 Equilibrium equations; 1.3.2 Stresses acting on an arbitrary face within the sheet; 1.3.3 Principal stresses; 1.3.4 Rotation of stresses; 1.3.5 Special states of stress; 1.3.6 Mohr's circle for plane stress; 1.3.7 Lamé's ellipse; ...

Fields of Interest

Mechanical Engineering; Astronomy, Astrophysics and Cosmology; Aerospace Technology and Astronautics; Solid Mechanics; Theoretical and Applied

Mechanics; Solid Mechanics

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2009,XXII, 943 p.(Solid Mechanics and Its Applications, Volume 163) Hardcover

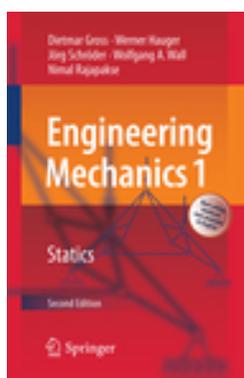
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-642-30318-0

Gross, D., Hauger, W., Schröder, J., Wall, W.A., Rajapakse, N., TU Darmstadt, Darmstadt, Germany

Engineering Mechanics 1

Statics

- Presents the basic concepts and principles of statics in as simple a form as the subject allows for students of diverse backgrounds
- Teaches the students how to solve problems of statics in a systematic manner
- Special features of the book are the TM tools and many examples

Statics is the first volume of a three-volume textbook on Engineering Mechanics. The authors, using a time-honoured straightforward and flexible approach, present the basic concepts and principles of mechanics in the clearest and simplest form possible to advanced undergraduate engineering students of various disciplines and different educational backgrounds. An important objective of this book is to develop problem solving skills in a systematic manner. Another aim of this volume is to provide engineering students as well as practising

engineers with a solid foundation to help them bridge the gap between undergraduate studies on the one ...

Contents

Introduction.- Basic Concepts.- Forces with a Common Point of Application.- General Systems of Forces, Equilibrium of a Rigid Body.- Center of Gravity, Center of Mass, Centroids.- Support Reactions.- Trusses.- Beams, Frames, Arches.- Work and Potential Energy.- Static and Kinetic Friction

Fields of Interest

Mechanical Engineering; Civil Engineering; Electrical Engineering; Materials Science, general; Physics, general; Mathematics, general

Content Level

Upper undergraduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2nd ed. 2013,IX, 301 p. 249 illus. With online files/update. Softcover

Medium Type

Book w. online files / update

Imprint

Springer

[Order Quantity](#)



ISBN : 978-1-4899-7549-2

Madenci, Erdogan, Guven, Ibrahim, University of Arizona Dept. Aerospace & Mechanical, TUCSON, AZ

The Finite Element Method and Applications in Engineering Using ANSYS®

- Provides software input files for color figures and screen shots, allowing readers to

recreate them on their own computers

- Minimizes the need for additional reference material by covering the fundamental topics in finite element methods in a self-contained, introductory text
- Introduces topics in a clear, straightforward manner through extensive examples from various engineering disciplines

This textbook offers theoretical and practical knowledge of the finite element method. The book equips readers with the skills required to analyze engineering problems using ANSYS®, a commercially available FEA program. Revised and updated, this new edition presents the most current ANSYS® commands and ANSYS® screen shots, as well as modeling steps for each example problem. This self-contained, introductory text minimizes the need for additional reference material by covering both the fundamental topics in finite element methods and advanced topics concerning modeling and analysis. It focuses on the use of ANSYS® through both the Graphics ...

Contents

Preface.- List of Problems Solved.- Introduction.- Fundamentals of ANSYS®.- Fundamentals of Discretization.- ANSYS® Preprocessor.- ANSYS® Solution And Postprocessing.- Finite Element Equations.- Use of Commands in ANSYS®.- Linear Structural Analysis.- Linear Analysis of Field Problems.- Nonlinear Structural Analysis.- Advanced Topics In ANSYS®.- References.- Index.

Fields of Interest

Mechanical Engineering; Mathematical and Computational Engineering; Computer-Aided Engineering (CAD, CAE) and Design; Simulation and Modeling; Computational Science and Engineering

Content Level

Professional/practitioner

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2nd ed. 2015,XIV, 657 p. 475 illus. Hardcover

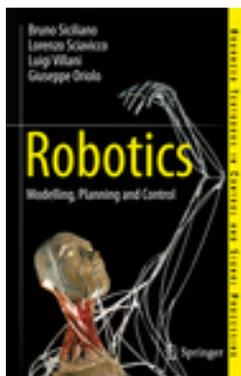
Medium Type

Book

Imprint

Springer

Order Quantity



ISBN : 978-1-84628-641-4

Siciliano, B., Sciacicco, L., Villani, L., Oriolo, G., Università di Napoli Federico II, Napoli, Italy

Robotics

Modelling, Planning and Control

- In-depth coverage of control both of manipulators and mobile robots sets this apart from other robotics textbooks
- Worked examples and MATLAB®-based simulations developed throughout the text
- Expands and updates an already-popular text with material that will make it even more attractive for use in all kinds of graduate robotics courses

The classic text on robot manipulators now covers visual control, motion planning and mobile robots too! Based on the successful Modelling and Control of Robot Manipulators by Sciacicco and Siciliano (Springer, 2000), Robotics provides the basic know-how on the foundations of robotics: modelling, planning and control. It has been expanded to include coverage of mobile robots, visual control and motion planning. A variety of problems is raised throughout, and the proper tools to find engineering-oriented solutions are introduced and explained. The text includes coverage of fundamental topics like kinematics, and trajectory planning and ...

Contents

Kinematics.- Differential Kinematics and Statics.- Trajectory Planning.- Actuators and Sensors.- Control Architecture.- Dynamics.- Motion Control.- Force Control.- Visual Servoing.- Mobile Robots.- Motion Planning.

Fields of Interest

Robotics and Automation; Control, Robotics, Mechatronics; Simulation and Modeling; Artificial Intelligence; Machinery and Machine Elements

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

2009,XXIV, 632 p. 298 illus. With online files/ update.(Advanced Textbooks in Control and Signal Processing) Hardcover

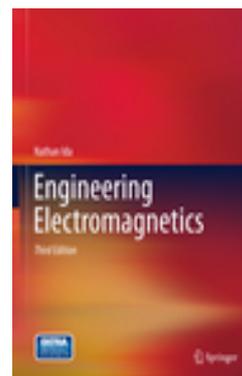
Medium Type

Book w. online files / update

Imprint

Springer

Order Quantity



ISBN : 978-3-319-07805-2

Ida, Nathan, University of Akron, Akron, OH, USA

Engineering Electromagnetics

- More than 400 examples and exercises, exercising every topic in the book
- Includes 600 end-of-chapter problems, many of them applications or simplified applications
- Discusses the finite element, finite difference and method of moments in a dedicated chapter

This book provides students with a thorough theoretical understanding of electromagnetic field equations and it also treats a large number of applications. The text is a comprehensive two-semester textbook. The work treats most topics in two steps – a short, introductory chapter followed by a second chapter with in-depth extensive treatment; between 10 to 30 applications per topic; examples and exercises throughout the book; experiments, problems and summaries. The new edition includes: modifications to about 30-40% of the end of chapter problems; a new introduction to electromagnetics based on behavior of charges; a new section on units; ...

Contents

Vector Algebra.- Vector Calculus.- Coulomb's Law and the Electric Field.- Gauss's Law and the Electric Potential.- Boundary Value Problems: Analytic Methods of Solution.- Boundary Value Problems: Numerical

(Approximate) Methods.- The Steady Electric Current.- The Static Magnetic Field.- Magnetic Materials and Properties.- Faraday's Law of Induction.- Maxwell's Equations.- Electromagnetic Waves and Propagation.- Reflection and Transmission of Plane Waves.- Theory of Transmission Lines.- The Smith Chart, Impedance Matching and Transmission Line Circuits.- Transients on Transmission Lines.- Waveguides and Resonators.- Antennas and ...

Fields of Interest

Signal, Image and Speech Processing; Information Systems and Communication Service; Communications Engineering, Networks

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

3rd ed. 2015,XXVI, 1046 p. 842 illus. With online files/update. Hardcover

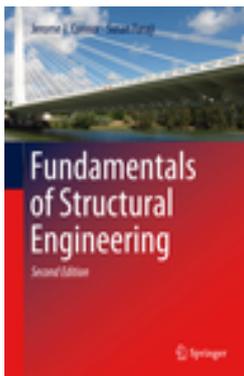
Medium Type

Book w. online files / update

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-319-24329-0

Connor, Jerome J., Faraji, Susan, Massachusetts Institute of Technology, Cambridge, , USA

Fundamentals of Structural Engineering

- Adds a new chapter on limit analysis;
- Emphasizes problem-based understanding of structural behavior;
- Organizes chapters by structural types;

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 ...

Contents

Part I - Statically Determinate Structures.- 1.Introduction to Structural Engineering.- 2.Statically Determinate Truss Structures.- 3.Statically Determinate Beams.- 4.Statically Determinate Plane Frames.- 5. Cable Structures.- 6.Statically Determinate Curved Members.- 7.Shallow Foundations.- 8. Vertical Retaining Wall Structures.- Part II- Statically Indeterminate Structures.- 9.The Force Method.- 10.The Displacement Method.- 11.Approximate Methods for Estimating Forces in Statically Indeterminate Structures.- 12. Finite Element Displacement Method for Framed Structures.- Part III- Practice of Structural Engineering.- 13.Multi-span ...

Fields of Interest

Solid Mechanics; Light Construction, Steel Construction, Timber Construction; Building Construction and Design; Solid Construction; Structural Materials

Content Level

Upper undergraduate

Product category

Undergraduate textbook

Available

Bibliography

2nd ed. 2016,XXVII, 1050 p. 900 illus., 146 illus. in color. Hardcover

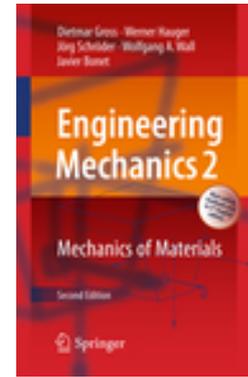
Medium Type

Book

Imprint

Springer

[Order Quantity](#)



ISBN : 978-3-662-56271-0

Gross, D., Hauger, W., Schröder, J., Wall, W.A., Bonet, J., TU Darmstadt, Darmstadt, Germany

Engineering Mechanics 2

Mechanics of Materials

- Offers a fully revised edition supplemented by additional examples
- Presents the basic concepts and principles of Mechanics of Materials in the clearest and simplest form the subject allows
- Helps students develop problem solving skills in a systematic manner

Now in its second English edition, Mechanics of Materials is the second volume of a three-volume textbook series on Engineering Mechanics. It was written with the intention of presenting to engineering students the basic concepts and principles of mechanics in as simple a form as the subject allows. A second objective of this book is to guide the students in their efforts to solve problems in mechanics in a systematic manner. The simple approach to the theory of mechanics allows for the different educational backgrounds of the students. Another aim of this book is to provide engineering students as well as practising engineers with a basis ...

Contents

1 Tension and Compression.- 2 Stress.- 3 Strain, Hooke's Law.- 4 Bending of Beams.- 5 Torsion.- 6 Energy Methods.- 7 Buckling of Bars.

Fields of Interest

Solid Mechanics; Structural Materials; Mechanical Engineering

Content Level

Lower undergraduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

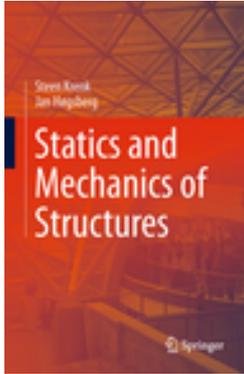
2nd ed. 2018,XIII, 308 p. 159 illus., 156 illus. in color. Softcover

Medium Type

Book

Imprint

Springer

Order Quantity

ISBN : 978-94-007-6112-4

Krenk, Steen, Høgsberg, Jan, Technical University of Denmark Department of Mechanical Engineering, Kongens Lyngby, Denmark

Statics and Mechanics of Structures

- Includes exercises tailored to support the handling of simplified but technically realistic problems
- Basic results are highlighted in self-contained boxes for later reference
- Covers classic analysis of simple structures and includes the necessary aspects of 'mechanics of materials' to enable the treatment of deformation, statically indeterminate structures, columns and failure

The statics and mechanics of structures form a core aspect of civil engineering. This book provides an introduction to the subject, starting from classic hand-calculation types of analysis and gradually advancing to a systematic form suitable for computer implementation. It starts with statically determinate structures in the form of trusses, beams and frames. Instability is discussed in the form of the column problem - both the ideal column and the imperfect column used in actual column design. The theory of statically indeterminate structures is then introduced, and the force and deformation methods are explained and illustrated. An ...

Contents

Preface.- 1 Equilibrium and Reactions.- 2 Truss Structures.- 3 Statics of Beams and Frames.- 4 Deformation of Beams and Frames.- 5 Column Stability.- 6 The Force Method.- 7 Deformation and Element Methods for Frames.- 8 Stresses and Strains.- 9 Material

Behavior.- 10 General Bending of Beams.- 11 Flexure and Torsion of Beams.- References.- Index.

Fields of Interest

Solid Mechanics

Content Level

Graduate

Product category

Graduate/advanced undergraduate textbook

Available

Bibliography

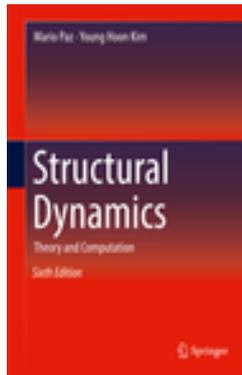
2013,XI, 506 p. 680 illus., 663 illus. in color. Hardcover

Medium Type

Book

Imprint

Springer

Order Quantity

ISBN : 978-3-319-94742-6

Paz, Mario, Kim, Young Hoon, University of Louisville, Louisville, KY, USA

Structural Dynamics**Theory and Computation**

- Graduate and undergraduate students can easily use contemporary computer program (MATLAB) that are dominantly used in the US and other countries
- Printed code language helps students to understand application of structural dynamics
- Graduate students are able to apply the fundamentals to real design problems using current version and practices

The sixth edition of Structural Dynamics: Theory and Computation is the complete and comprehensive text in the field. It presents modern methods of analysis and techniques adaptable to computer programming clearly

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Fields of Interest

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