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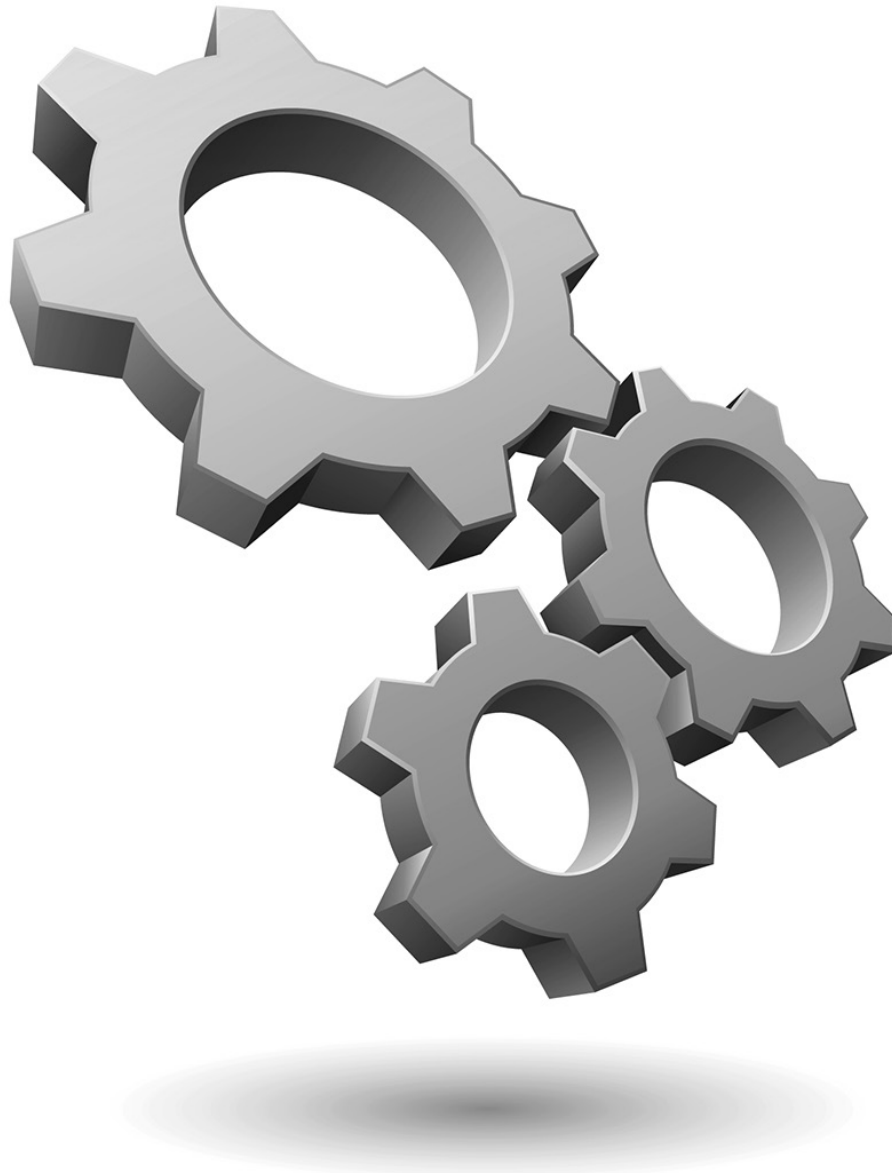
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Mechanical Engineering

Basic Mechanical Engineering

Basic Mechanical Engineering, 2/e

Pravin Kumar

Pages: 784

Year: 2018



About the Book

Basic Mechanical Engineering continues to fill the need for a textbook that provides the complete overview of several aspects of mechanical engineering—thermal engineering, mechanical design and manufacturing engineering. With lucid exposition of the fundamental concepts along with numerous worked-out examples and well-labeled detailed illustrations, this book provides a holistic understanding of the subject.

Features

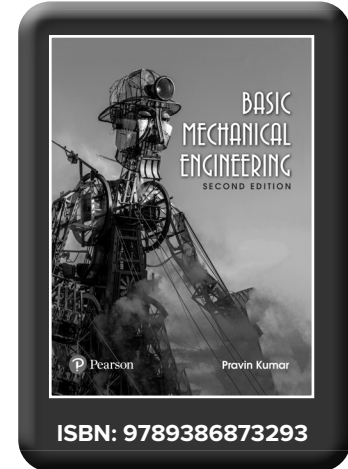
- Coverage of important topics such as power plant engineering, non-conventional energy resources, sheet metal work and NC, CNC and DNC machines
- Chapters on Fuels and Combustion and Internal Combustion Engines updated to include recent advancements
- Points to remember and list of important formulae at the end of each chapter for quick recapitulation
- More than 1100 end-of-chapter exercises including multiplechoice questions, theory questions and exercise problems for efficient self-assessment

Contents

1. Concepts of Thermodynamics and Properties of Gases
2. Fuels and Combustion
3. Power Plant Engineering and Sources of Energy
4. Properties of Steam and Steam Generators
5. Steam and Gas Turbines
6. Internal Combustion Engines
7. Heat Transfer
8. Refrigeration and Air Conditioning
9. Fluid Mechanics and Hydraulic Machines
10. Air Compressors
11. Centroid and Moment of Inertia
12. Stress and Strain
13. Machine Elements
14. Flywheel and Governors
15. Power Transmission Devices
16. Couplings, Clutches, and Brakes
17. Engineering Materials
18. Mechanical Measurement
19. Machine Tools
20. Casting and Welding
21. Mechanical Working of Metals, Sheet Metal Work, Powder Metallurgy, and Smithy
22. Manufacturing Systems: NC, CNC, DNC, and Robotics
23. Heat Treatment

About the Author

Pravin Kumar obtained his Ph.D. from IIT Delhi and M.Tech. from Institute of Technology (BHU), Varanasi. Presently, he is working as a faculty in the Department of Mechanical Engineering, Delhi Technological University (Formerly Delhi College of Engineering). He has more than 16 years of teaching and research experience. He has been teaching Basic Mechanical Engineering for several years. He has also authored two more books—Industrial Engineering and Management, published by Pearson Education, and Fundamentals of Engineering Economics, published by Wiley India Pvt. Ltd. He has published more than 50 research papers in the National and International Journals and Conferences.



Automation, Production Systems, and Computer-Integrated Manufacturing, 5/e

Mikell P. Groover

Pages: 864

Year: 2024



About the Book

Automation, Production Systems, and Computer-Integrated Manufacturing provides the most advanced, comprehensive, and balanced coverage of the subject of any text on the market. It covers all the major cutting-edge technologies of production automation and material handling, and how these technologies are used to construct modern manufacturing systems. It is appropriate for advanced undergraduate/graduate-level courses in Automation, Production Systems, and Computer-Integrated Manufacturing.

Features

- Automation and Artificial Intelligence, CNC trends and developments and Collaborative Robots added
- Coverage on Robot Kinematics, MRP lot sizing algorithms, and Kanban planning and control models
- Discussion on Productive Performance Metrics has been revised based on the bottleneck model developed by James Solberg
- The coverage of CNC Machining Centers and related machine tools has been significantly revised and expanded
- More than 150 multiple-choice questions added along with several new line drawings

Contents

1. Introduction

Part I: Overview of Manufacturing

2. Manufacturing Operations
3. Manufacturing Metrics and Economics

Part II: Automation and Control Technologies

4. Introduction to Automation
5. Industrial Control Systems
6. Hardware Components for Automation and Process Control
7. Computer Numerical Control

Appendix 7A: Coding for Manual Part Programming

8. Industrial Robotics
9. Discrete Control and Programmable Logic Controllers

Part III: Material Handling and Identification

10. Material Transport Systems
11. Storage Systems
12. Automatic Identification and Data Capture

Part IV: Manufacturing Systems

13. Overview of Manufacturing Systems
14. Single-Station Manufacturing Cells
15. Multi-Station Manufacturing Systems: Manual Assembly Lines

Appendix 15A: Batch-Model and Mixed-Model Lines

16. Multi-Station Manufacturing Systems: Automated Production Lines Multi-Station Manufacturing Systems: Automated Production Lines

Appendix 16A: Transfer Lines with Internal Storage

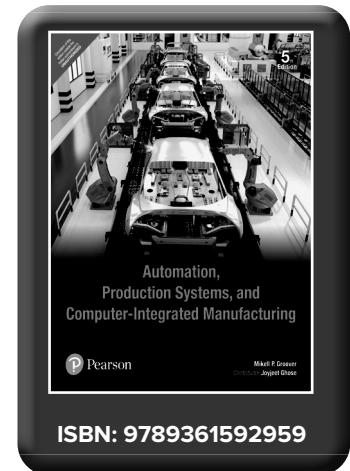
17. Automated Assembly Systems
 18. Group Technology and Cellular Manufacturing
- #### Appendix 18A: Opitz Parts Classification and Coding System
19. Multi-Station Manufacturing Systems: Automated For Flexibility

Part V: Quality Control Systems

20. Quality Programs for Manufacturing
- #### Appendix 20A: The Six Sigma DMAIC Procedure
21. Inspection Principles and Practices
 22. Inspection Technologies
- #### Appendix 22A: Geometric Feature Construction

Part VI: Manufacturing Support Systems And Computer-Integrated Manufacturing

23. Product Design and CAD/CAM in the Production System
24. Process Planning and Concurrent Engineering
25. Production Planning and Control Systems
26. Just-In-Time and Lean Production



About the Author

Mikell P. Groover is Professor Emeritus of Industrial and Systems Engineering at Lehigh University, where he taught and did research for 44 years. He received his B.A. in Arts and Science (1961), B.S. in Mechanical Engineering (1962), M.S. in Industrial Engineering (1966), and Ph.D. (1969), all from Lehigh. His industrial experience includes several years as a manufacturing engineer before embarking on graduate studies at Lehigh.

CAD/CAM: Computer-Aided Design and Manufacturing

M. Groover, E. Zimmers

Pages: 512

Year: 2003

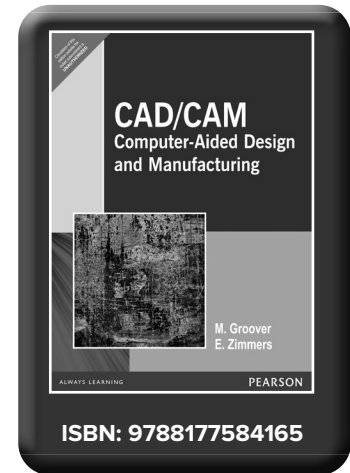


About the Book

This is a comprehensive survey of the technical topics relating to CAD/CAM including interactive computer graphics, numerical control, computer process control, robotics, group technology, computer integrated production management, and flexible manufacturing systems. This successful book has been designed as a textbook for college course and industry continuing education course in CAD/CAM, as well as for engineers, computer specialists and others who wish to learn about the technology and applications of CAD/CAM.

Contents

1. Computers, the Foundation of Cad/Cam
2. Computer-Aided Design
3. Numerical Control, the Beginnings of CAM
4. Industrial Robots
5. Group Technology and Process Planning
6. Computer-Integrated Production Management Systems
7. Computer Control
8. Cad/Cam Implementation



Computational Fluid Dynamics

Introduction to Computational Fluid Dynamics

Pradip Niyogi, S. K. Chakrabartty, M.K. Laha

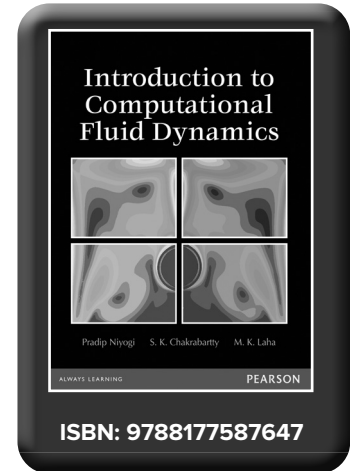
Pages: 600

Year: 2006



About the Book

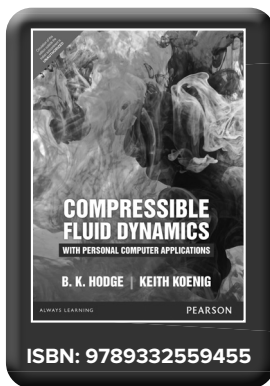
Introduction to Computational Fluid Dynamics is a self-contained introduction to a new subject, arising through the amalgamation of classical fluid dynamics and numerical analysis supported by powerful computers. Written in the style of a text book for advanced level B.Tech, M.Tech and M.Sc. students of various science and engineering disciplines. It introduces the reader to finite-difference and finite-volume methods for studying and analyzing linear and non-linear problems of fluid flow governed by inviscid incompressible and compressible Euler equations as also incompressible and compressible viscous flows governed by boundary-layer and Navier-Stokes equations. Simple turbulence modeling have been presented.



Features

- It is a first course written with the specific background of Indian students in mind, that prepares the student with necessary prerequisites and mathematical foundation.
- It covers the basic concepts of the more important and useful finite-difference and finite-volume methods needed in the application areas of CFD.
- Illustrative computer programs have been provided.
- Illustrative Case Studies have been provided.

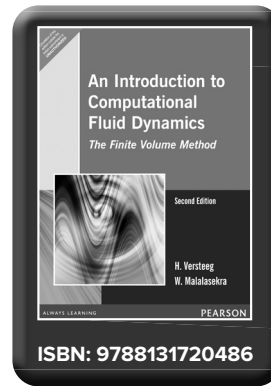
➡ ALSO AVAILABLE...



Compressible Fluid Dynamics

B.K. Hodge /
Keith Koenig

Pages: 648



An Introduction to Computational Fluid Dynamics: The Finite Volume Method, 2/e

H. Versteeg / W. Malalasekera

Pages: 518



Engineering Graphics/Engineering Drawing

Engineering Drawing, 2/e

M. B. Shah, B. C. Rana

Pages: 580

Year: 2009



About the Book

Engineering Drawing, 2e continues to cover all the fundamental topics of the field, while maintaining its unique focus on the logic behind each concept and method. Based on extensive market research and reviews of the first edition, this edition includes a new chapter on scales, the latest version of AutoCAD, and new pedagogy.

Features

- Learning goals through Objectives.
- Overview of the chapter through Introduction.
- Recap of concepts through solved examples.
- Comes with Live Draw CD.

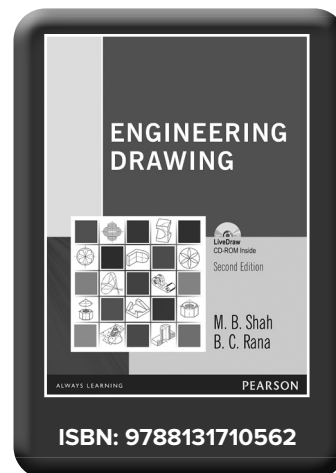
Contents

1. Basics of Engineering Drawing
2. Symbolic Lines and Lettering
3. Geometrical Constructions, Loci and Engineering Plane Curves
4. Scales
5. Projections of Points and Lines
6. Projections on Auxiliary Reference Planes
7. Projections of Planes
8. Projections of Solids
9. Sections of Solids
10. Intersection of Surfaces
11. Development of Surfaces
12. Multiview Orthographic Projections
13. Sectional Views
14. Dimensioning
15. Auxiliary Views
16. Reading Orthographic Projections
17. Isometric Projections
18. Oblique Parallel Projections and Perspective Projections
19. Threaded Fasteners
20. Riveted and Welded Joints
21. Computer-aided Drafting

About the Author(s)

M. B. Shah is a professor of mechanical engineering and the principal of Shah and Anchor Kutchhi Engineering College, Mumbai.

B. C. Rana was an assistant professor at Veermata Jijabai Technological Institute.



Fundamentals of Engineering Drawing, 11/e

Warren J. Luzadder, Jon M. Duff

Pages: 704

Year: 2015

About the Book

This volume presents a solid fundamental treatment of engineering graphics, geometry, and modeling suitable for engineers and technologists. It reflects the most modern drafting procedures—from the fundamentals (for the beginner), to techniques and practices of drawing in specialized fields. This revision enhances understanding of graphics fundamentals in the era of computer-aided design to better prepare students to use CADD software effectively.

Features

- The Eleventh Edition elaborates on integration of computer graphics through six additional chapters of basic fundamentals; provides two sets of problems to test and reinforce readers' understanding of material; stresses the ability to manipulate three-dimensional geometry—whether on the surface of a drawing or as a solid computer model; and highlights popular CADD products and integrates CADD into each chapter as it naturally occurs.
- The authors cover all topics basic to the preparation of working drawings for both products and systems—e.g., multiview drawing and freehand sketching, spatial geometry, and design and dimensioning practices; and make extensive use of step-by-step illustrations.

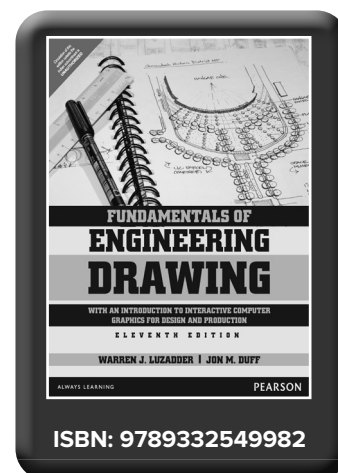
Contents

1. Introduction.
2. Drawing Instruments, Computer Drafting Equipment, and Techniques
3. Engineering Geometry
4. The Representation of Space Relationships: Two and Three Dimension
5. Multiview Representation for Design and Product Development
6. Freehand Sketching for Visualization and Communication
7. Sectional Views
8. Auxiliary Views
9. Basic Spatial Geometry for Design and Analysis
10. Developments and Intersections
11. Pictorial Presentation
12. The Design Process and Graphics
13. Dimensions, Notes, Limits, and Geometric Tolerances
14. Fastening and Connecting Methods for Assembly
15. Shop Processes and Tool Drawings
16. Production Drawings and Process Models
17. Computer-Aided Design and Drafting
18. Numerically Controlled Machine Tools and Robots
19. Graphic Methods for Engineering Communication and Computation
20. Graphical Mathematics
21. Design and Selection of Machine Elements: Gears, Cans, Linkages, Springs, and Bearings
22. Electronic Drawings
23. Structural Drawings
24. Topographic and Engineering Map Drawings

About the Author(s)

Warren J. Luzadder, Purdue University

Jon M. Duff, Purdue University



Engineering Materials/Materials Science

Introduction to Materials Science Engineering, 9/e

James F Shackelford

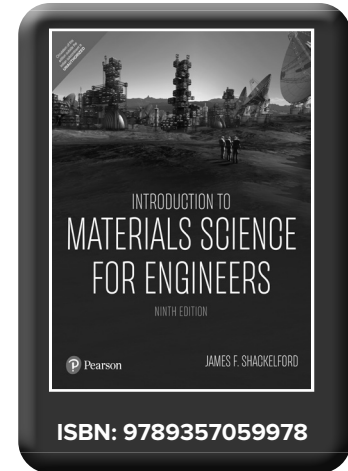
Pages: 692

Year: 2023



About the Book

Introduction to Materials Science for Engineers offers a balanced, current treatment of the full spectrum of engineering materials. The text covers the applications as well as physical and other relevant properties associated with engineering materials. The author explores all major categories of materials while also offering detailed examinations of a wide range of new materials with high-tech applications. The ninth edition has been revised to reflect recent data, trends and information



Features

- Updated coverage on the role of engineering materials in smartphones and tablets, increasingly ubiquitous parts of everyday life
- Enhanced discussion of the nature of optical fibers in telecommunication
- Refreshed and updated discussions of contemporary materials in modern engineering design, including an emphasis on the role of sustainability

Contents

1. Materials for Engineering
- PART I: The Fundamentals
2. Atomic Bonding
 3. Crystalline Structure—Perfection
 4. Crystal Defects and Noncrystalline Structure—Imperfection
 5. Diffusion
 6. Mechanical Behavior
 7. Thermal Behavior
 8. Failure Analysis and Prevention
9. Phase Diagrams—Equilibrium Microstructural Development
 10. Time—The Third Dimension
- PART II: Materials and Their Applications
11. Structural Materials—Metals, Ceramics, and Glasses
 12. Structural Materials—Polymers and Composites
 13. Electronic Materials
 14. Optical and Magnetic Materials
 15. Materials in Engineering Design

About the Author

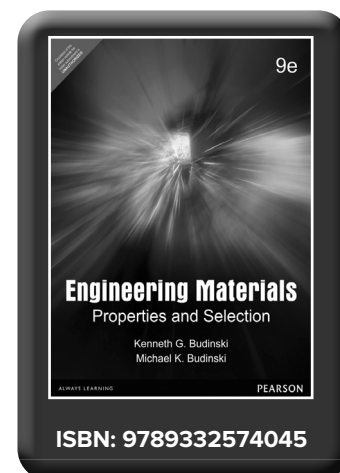
James F Shackelford, University of California, Davis

Engineering Materials : Properties and Selection, 9/e

Kenneth G. Budinski, Michael K. Budinski

Pages: 784

Year: 2016



About the Book

This introductory text covers theory and industry-standard ion practices, providing students with the working knowledge to make an informed ion of materials for engineering applications and to correctly specify materials on drawings and purchasing documents. Encompassing all significant material systems—metals, ceramics, plastics, and composites—this text incorporates the most up-to-date information

Features

- Features the latest cost and usage data to reflect current worldwide conditions, materials, engineering theories, and practices.
- Recommends a repertoire of materials that meet most design needs.
- Includes critical concepts sections that outline the key concepts of each chapter and give students an opportunity to assess their understanding.
- Unique selection information, developed by the authors, offers students a fresh approach to traditional topics and provides the most timely, complete and accurate coverage of the most recent developments.
- Focuses on the properties of industry-standard materials, teaching students how to specify these materials on engineering drawings and documents.

Contents

1. The Importance of Engineering Materials
2. Forming Engineering Materials from the Elements
3. The Role of Chemical and Physical Properties in Engineering Materials
4. The Role of Mechanical Properties in Engineering Materials
5. The Role of Tribology in Engineering Materials
6. The Role of Corrosion in Engineering Materials
7. Principles of Polymeric Materials
8. Polymer Families
9. Plastic and Polymer Composite Fabrication Processes
10. Selection of Plastic/Polymeric Materials
11. Ceramics, Cermets, Glass, and Carbon Products
12. Steel Products
13. Heat Treatment of Steels
14. Carbon and Alloy Steels
15. Tool Steels
16. Stainless Steels
17. Cast Iron, Cast Steel, and Powder Metallurgy Materials
18. Copper and Its Alloys
19. Aluminum and Its Alloys
20. Nickel, Zinc, Titanium, Magnesium, and Special Use Metals
21. Surface Engineering
22. Nanomaterials
23. The Methodology of Material Selection

About the Author(s)

Kenneth G. Budinski, Bud Labs

Michael K. Budinski, General Motors Corporation

Material Science and Metallurgy

U C Jindal, Atish Mozumder

Pages: 552

Year: 2011



About the Book

The book is presented in 20 chapters. The language used is user friendly and diagrams are giving the clear view and concept. Solved problems, multiple choice questions and review questions are also integral part of the book.

Features

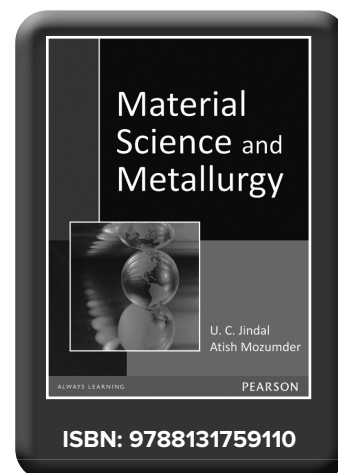
- A separate chapter highlighting various concepts and applications related to thermal properties and wear of materials.
- Exclusive coverage of different types of processes incorporated during heat treatment of steels.

Contents

- | | |
|---|---|
| 1. Atomic Structure | 11. Organic Materials |
| 2. Atomic Bonding and Crystal | 12. Ceramic Materials |
| 3. Imperfections in Solids | 13. Composite Materials |
| 4. Plastic Deformation in Crystalline Materials | 14. Wears of Materials |
| 5. Mechanical Properties | 15. Corrosion and Oxidation |
| 6. Diffusion | 16. Thermal Properties |
| 7. Phase Diagrams | 17. Electrical Conductivity and Insulating Properties |
| 8. Phase Transformations | 18. Semiconductors |
| 9. Heat Treatment of Steels | 19. Dielectric Properties |
| 10. Metals and Alloys | 20. Magnetic Properties |

About the Author(s)

Dr. U. C. Jindal is former Professor and Head of the Department of Mechanical Engineering, Delhi College of Engineering. For the last 45 years Dr Jindal has been involved in teaching, research and development activities in the mechanics group of subjects – engineering mechanics, strength of materials, machine design, theory of machines and materials science.



Engineering Mechanics

Engineering Mechanics: Statics & Dynamics, 14/e (SI Edition)

R. C. Hibbeler

Pages: 1330

Year: 2017



About the Book

Engineering Mechanics: Statics & Dynamics excels in providing a clear and thorough presentation of the theory and application of engineering mechanics. Engineering Mechanics empowers students to succeed by drawing upon Prof. Hibbeler's everyday classroom experience and his knowledge of how students learn. This text is shaped by the comments and suggestions of hundreds of reviewers in the teaching profession, as well as many of the author's students.

Features

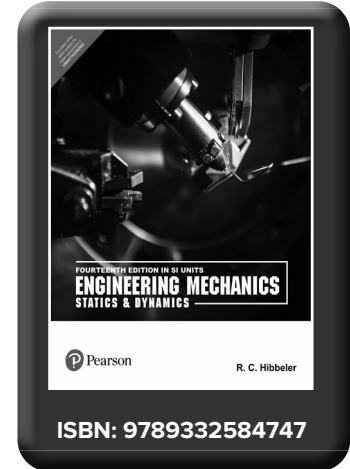
- **NEW!** Preliminary Problems are designed to test students' conceptual understanding of the theory and are placed throughout the text before the Fundamentals Problems. Preliminary Problems solutions require little or no calculation and are intended to help students develop a basic understanding of the concepts before they are applied numerically.
- Each chapter is organized into well-defined sections that contain an explanation of specific topics, illustrative example problems, and at the end of the chapter, a set of relevant homework problems.
- Fundamental Problems, selectively located after the example problems, offer students simple applications of the concepts and therefore provide them with the chance to develop their problem-solving skills before attempting to solve any of the standard problems that follow.
- Photos placed throughout the text show how the principles of fluid mechanics apply to real-world situations.

Contents

- | | |
|-----------------------------------|---|
| 1. General Principles | 11. Virtual Work |
| 2. Force Vectors | 12. Kinematics of a Particle |
| 3. Equilibrium of a Particle | 13. Kinetics of a Particle: Force and Acceleration |
| 4. Force System Resultants | 14. Kinetics of a Particle: Work and Energy |
| 5. Equilibrium of a Rigid Body | 15. Kinetics of a Particle: Impulse and Momentum |
| 6. Structural Analysis | 16. Planar Kinematics of a Rigid Body |
| 7. Internal Forces | 17. Planar Kinetics of a Rigid Body: Force and Acceleration |
| 8. Friction | 18. Planar Kinetics of a Rigid Body: Work and Energy |
| 9. Center of Gravity and Centroid | 19. Planar Kinetics of a Rigid Body: Impulse and Momentum |
| 10. Moments of Inertia | |

About the Author

R C Hibbeler currently teaches both civil and mechanical engineering courses at the University of Louisiana, Lafayette. In the past he has taught at the University of Illinois at Urbana, Youngstown State University, Illinois Institute of Technology, and Union College.



Engineering Mechanics - Statics and Dynamics

Irving H. Shames, G. Krishna Mohana Rao

Pages: 864

Year: 2005



About the Book

This book is designed to provide a mature, in-depth treatment of engineering mechanics at the undergraduate level and to offer continuity with, and a smooth transition to, upper-level courses. This text focuses on developing a solid understanding of basic principles rather than rote learning of specific methodologies.

Features

- Offers an approach that improves continuity and provides a smooth transition to upper-level courses in other engineering sciences.
- Provides in-depth coverage of Screw Jack and Compound Pendulum.

Contents

Part I (Statics)

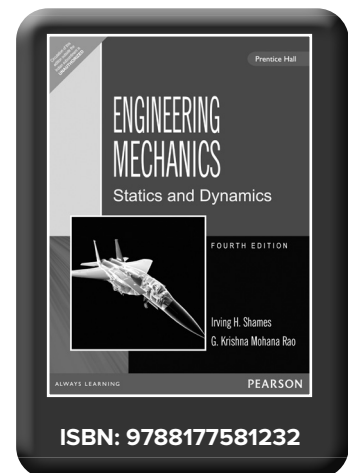
1. Fundamentals of Mechanics
2. Elements of Vector Algebra
3. Systems of forces
4. Equivalent Force Systems
5. Equations of Equilibrium
6. Friction Forces
7. Properties of Surfaces
8. Moments and Products of Inertia
16. Vibrations

Part II (Dynamics)

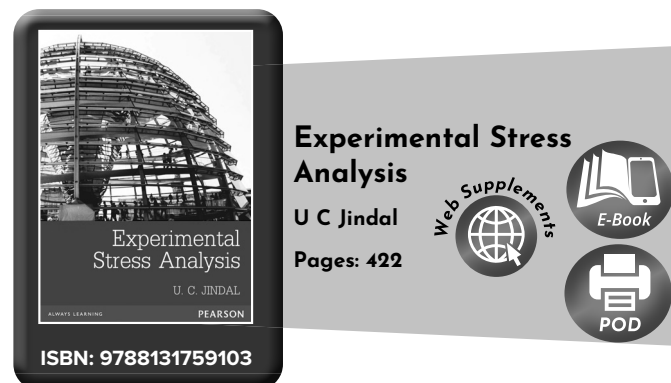
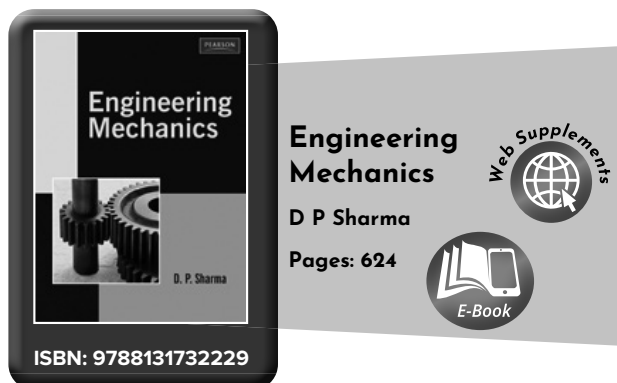
9. Kinematics of a Particle-Simple Relative Motion
10. Particle Dynamics
11. Energy Methods for Particles
12. Methods of Momentum for Particles
13. Kinematics of Rigid Bodies: Relative Motion
14. Kinetics of Plane Motion of Rigid Bodies
15. Energy and Impulse-Momentum Methods for Rigid Bodies

About the Author

Irving H. Shames, George Washington University



➡ ALSO AVAILABLE...



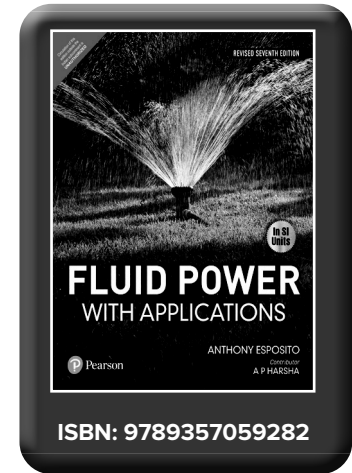
Fluid Mechanics and Hydraulic Machines

Fluid Power with Applications, Revised, 7/e (In SI Units)

Anthony Esposito

Pages: 652

Year: 2024



About the Book

With Applications continues to provide readers with an in-depth background in the field of fluid power. Emphasizing such subjects as design, analysis, operation, maintenance, and practical applications, this text provides the “how” as well as the “why” of fluid power systems. The revised seventh edition has been completely SI metricated.

Features

- Includes coverage of the use of hydroforming which allows to produce more complex shaped panels and lighter structural parts
- Material on fluid power systems that enhance the use of renewable energy, reflects the increasing emphasis on lowering air pollution levels and reducing green-house gases to minimize global warming
- Many photographs and illustrations are updated to reflect current fluid power technology. This allows the readers to become more aware of the latest advances in fluid power systems and applications
- An extensive array of industrial applications is provided to motivate and simulate students' interest in the field

Contents

1. Introduction to Fluid Power
2. Physical Properties of Hydraulic Fluids
3. Energy and Power in Hydraulic Systems
4. Frictional Losses in Hydraulic Pipelines
5. Hydraulic Pumps
6. Hydraulic Cylinders and Cushioing Devices
7. Hydraulic Motors
8. Hydraulic Valves
9. Hydraulic Circuit Design and Analysis
10. Hydraulic Conductors and Fittings
11. Ancillary Hydraulic Devices
12. Maintenance of Hydraulic Systems
13. Pneumatics: Air Preparation and Components
14. Pneumatics: Circuits and Applications
15. Basic Electrical Controls for Fluid Power Circuits
16. Fluid Logic Control Systems
17. Advanced Electrical Controls for Fluid Power Systems

About the Author

Anthony Esposito, Emeritus, Miami University.

Fluid Mechanics for Engineers (In SI Units)

David A Chin

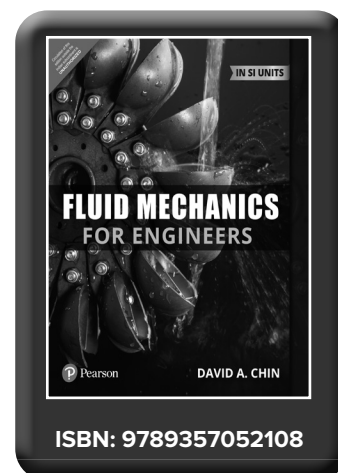
Pages: 1048

Year: 2023



About the Book

Written and conceived by an author with decades of relevant experience in the fields of fluid mechanics, engineering, and related disciplines, Fluid Mechanics for Engineers effectively introduces engineering students to the principles of fluid mechanics. With the understanding that fluid mechanics is a required core course for most engineering students, the author focuses first and foremost on the most essential topics of the field. Practical applications for several engineering disciplines are considered, with a special focus on civil engineering. Written in a stimulating style, Fluid Mechanics for Engineers fulfills the requirements of a core course while keeping students engaged.



Features

- Emphasizes the fundamentals of fluid mechanics, including fluid properties, fluid statics, basic concepts of fluid flow, and the forms of the governing equations that are useful in solving practical problems.
- Material is presented in a thorough and rigorous fashion, featuring practical examples that apply to several engineering disciplines.
- Quantitative examples and illustrations related to the topics of fluid mechanics are provided throughout.
- The most useful relationships are highlighted to assist in solving practical problems.
- Key equations are listed at the end of each chapter.

Contents

- | | |
|--|----------------------------|
| 1. Properties of Fluids | 7. Flow in Closed Conduits |
| 2. Fluid Statics | 8. Turbomachines |
| 3. Kinematics and Streamline Dynamics | 9. Flow in Open Channels |
| 4. Finite Control Volume Analysis | 10. Drag and Lift |
| 5. Differential Analysis | 11. Boundary-Layer Flow |
| 6. Dimensional Analysis and Similitude | 12. Compressible Flow |

About the Author

David A Chin, University of Miami.

Fluid Mechanics, 2/e in SI Units

R C Hibbeler

Pages: 916

Year: 2022



About the Book

Fluid Mechanics is intended to provide a comprehensive guide to a full understanding of the theory and many applications of fluid mechanics. The text features many of the hallmark pedagogical aids unique to Hibbeler texts, including its student-friendly clear organization. The text supports the development of student problem-solving skills through a large variety of problems, representing a broad range of engineering disciplines that stress practical, realistic situations encountered in professional practice, and provide varying levels of difficulty.

Features

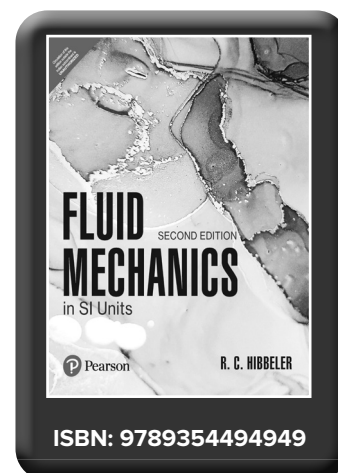
- The organization and approach of the text presents a structured method for introducing each new definition or concept, and to make the book a convenient resource for later reference and review.
- Procedures for Analysis is a unique feature that provides students with a logical and orderly method for applying theory and building problem-solving skills. The example problems are then solved using this outlined method in order to clarify its numerical application.
- Important Points provide a summary of the most important concepts in a section and highlights the most significant points that should be realized when applying the theory to solve problems.
- Photographs are used throughout the book to explain how the principles of fluid mechanics apply to real-world situations.
- Example Problems illustrate the application of fundamental theory to practical engineering problems and reflect problem-solving strategies discussed in associated Procedures for Analysis.
- Homework Problems depict realistic situations encountered in engineering practice. This realism is intended to both stimulate interest in the subject, and provide a means for developing the skills to reduce any problem from its physical description to a model or symbolic representation to which the principles of fluid mechanics may then be applied.

Contents

- | | |
|-------------------------------------|--|
| 1. Fundamental Concepts | 8. Dimensional Analysis and Similitude |
| 2. Fluid Statics | 9. Viscous Flow within Enclosed Conduits |
| 3. Kinematics of Fluid Motion | 10. Analysis and Design for Pipe Flow |
| 4. Conservation of Mass | 11. Viscous Flow over External Surfaces |
| 5. Work and Energy of Moving Fluids | 12. Open-Channel Flow |
| 6. Fluid Momentum | 13. Compressible Flow |
| 7. Differential Fluid Flow | 14. Turbomachines |

About the Author

R C Hibbeler currently teaches both civil and mechanical engineering courses at the University of Louisiana, Lafayette. In the past he has taught at the University of Illinois at Urbana, Youngstown State University, Illinois Institute of Technology, and Union College.



Gas Turbines and I.C. Engines

Fundamentals of Internal Combustion Engines

Bijan Kumar Mandal, Amitava Sarkar, Ambarish Datta

Pages: 884

Year: 2025

About the Book

Fundamentals of Internal Combustion Engines focuses on the gradual transition from the theoretical concepts of Engineering Thermodynamics to one of its applied counterparts – combustion engines. Accordingly, a few initial chapters have been devoted to recapitulation of thermodynamics principles while the rest are centered on the development of the subject proper. A blend of the classical knowledge and modern concept supported by ample experimental evidence, particularly in the field of combustion in SI and CI engines, is the crux of the book. Important areas like fuels, materials, equipment for engine performance measurement etc. have also been adequately addressed. Some aspects of gas turbine have also been discussed in brief.

Features

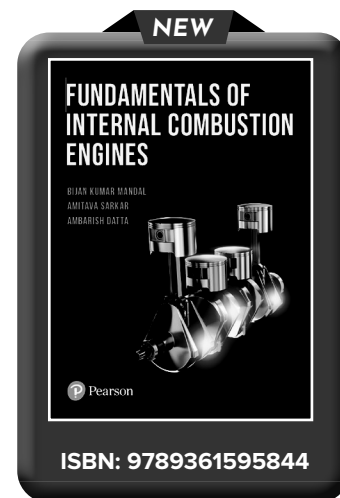
- Comprehensive discussion on modern fuel admission techniques and advanced ignition methods for SI engines
- A dedicated chapter on electronic control systems to explain the functioning of control mechanisms in engines
- Includes chapters on gas motion and intake/exhaust processes to enhance understanding of fluid flow and heat transfer during engine operation
- Detailed coverage of engine emissions and state-of-the-art mitigation techniques
- A rich collection of solved and unsolved numerical problems included throughout the book to aid both conceptual clarity and practical application

Contents

1. Introduction to Internal Combustion Engines
2. Review of Basic Engineering Thermodynamics
3. Fuel-Air Cycle and Actual Cycle Analysis
4. Thermochemistry
5. Fuels for Internal Combustion Engines
6. Fuel Admission Systems in Spark Ignition Engine
7. Fuel Admission Process in CI Engine
8. Gas Motion Within the Engine Cylinder
9. Intake and Exhaust Processes
10. Ignition Systems in SI Engines
11. Combustion Process in SI Engine
12. Combustion Process in CI Engine
13. Electronic Control Unit
14. Lubrication in IC Engines
15. Engine Performance and Control
16. Pollution from IC Engines and Its Control
17. Heat Transfer in Engine
18. Introduction to Gas Turbine

About the Author(s)

Bijan Kumar Mandal is presently working as a Professor in the Department of Mechanical Engineering at Indian Institute of Engineering Science and Technology, Shibpur, Howrah 711 103, India. He completed B.Tech. (Hons.) in Mechanical Engineering in 1985 from Indian Institute of Technology, Kharagpur and M.Tech. in Mechanical Engineering (Thermal Engineering specialization) in 1988 from the same institute. He obtained Ph. D. degree in Engineering from Jadavpur University in 2006. His areas of research interest are Alternative Fuels for IC engines, CFD, Numerical Combustion, and Refrigeration. He is teaching for the last 35 years. He has guided 35 M.Tech. students, 10 Ph.D scholars and more than 50 Undergraduate projects. He has also adjudicated more than 40 Ph. D. theses of different Indian Universities and Institutes. Professor Mandal has also delivered around 30 invited talks at different academic and industrial platforms. He also worked for one year at Hindustan Motors Limited. He is life member of ISTE (Indian Society of Technical Education), SESI (Solar Energy Society of India) and Fellow of Institution of Engineers (India). He has visited University of Oxford, University of Glasgow, Imperial College, London, San Diego State University, California, USA and National University of Singapore as part of his academic activities. He has published more than 150 research papers in reputed journals and conference proceedings. **AMITAVA SARKAR** retired after working as Visiting Professor in the Department of Mechanical Engineering at IEST Shibpur and also at NIT Silchar. Previously he was associated



with Jadavpur University. He was Professor and Head of Mechanical Engineering Department at Jadavpur University. Dr. Sarkar had graduated from erstwhile B.E. College, completed his Masters Degree both in Thermal and Production Engineering from the same Institute. He completed his PhD degree from IIT Madras. He worked for a few years in the power plant industry. Prof. Sarkar was associated with teaching for almost 37 years. He is an eminent expert in the field of Thermal Engineering, working in many of its sub areas (especially, combustion in IC engines). His works in the area of Heat transfer has earned him great recognition. He is a member of many Engineering Society of National and International repute. Prof. Sarkar has published a lot of important research papers in reputed journals and conferences, in his long career. Over the years he had supervised 28 Ph.D. scholars, 30 M.Tech. students and many UG students. AMBARISH DATTA obtained his bachelor degree in Automobile Engineering from West Bengal University of Technology in 2008 and Master of Automobile Engineering from Jadavpur University in 2010. He obtained Ph. D. degree in Engineering from Indian Institute of Engineering Science and Technology. He has published more than 20 papers in reputed International Journals and Conferences. His major field of study is Internal Combustion Engine and Alternate Fuels. He worked as an Assistant Professor in the Department of Automobile Engineering at MCKV Institute of Engineering, Howrah from 2010 to 2011 and at Dr. Sudhir Chandra Sur Degree Engineering College, Kolkata from 2017 to 2018. Presently, he is working as Lecturer in Automobile Engineering under the Department of Technical Education, Training and Skill Development, Government of West Bengal.

Gas Turbine Theory, 7/e

H. Cohen, H.I.H. Saravanamuttoo, G.F.C. Rogers,
Paul Straznicky, A.C Nix

Pages: 628

Year: 2019



About the Book

Gas Turbine Theory is the classic course text on gas turbines, suitable for both undergraduate and graduate students of mechanical and aeronautical engineering. This new seventh edition will also continue to be a valuable reference for practising gas turbine engineers.

Features

- Completely updated to cover current industry requirements and applications.
- Coverage of both aircraft and industrial gas turbines.
- Includes detailed treatment of off-design performance.
- Incorporates in-depth examples throughout.
- Based on the authors' extensive teaching and professional experience.

Contents

1. Introduction
2. Shaft power cycles
3. Gas turbine cycles for aircraft propulsion
4. Centrifugal compressors
5. Axial flow compressors
6. Combustion systems
7. Axial and radial flow turbines
8. Mechanical design of gas turbines
9. Prediction of performance of simple gas turbines
10. Prediction of performance

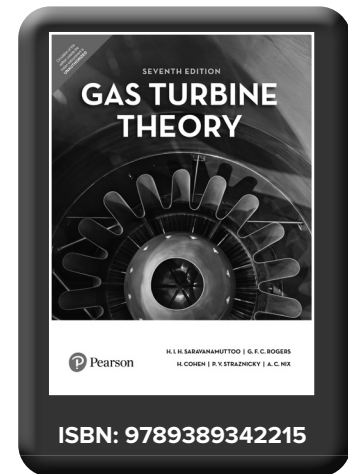
About the Author(s)

Herb Saravanamuttoo, Professor Emeritus, Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Canada, has many years experience in the gas turbine industry on both sides of the Atlantic, and is a Past President of the Canadian Aeronautics and Space Institute.

The late **Gordon Rogers** was Professor Emeritus of Engineering Thermodynamics at the University of Bristol. He was author, with YR Mayhew, of Engineering Thermodynamics Work and Heat Transfer, 4th edition.

The late **Henry Cohen** was formerly University Lecturer and Director of Studies in Engineering at Queens' College, Cambridge. Paul Straznicky is Professor Emeritus of Mechanical and Aerospace Engineering at Carleton University and has many years of experience as a mechanical design engineer.

Andrew Nix is an Assistant Professor of Mechanical and Aerospace Engineering at West Virginia University and has extensive experience in gas turbine design and durability, with a focus on turbine heat transfer and cooling.



Engineering Fundamentals of the Internal Combustion Engine, 2/e

Willard W. Pulkrabek

Pages: 496

Year: 2015



About the Book

This applied thermoscience text explores the basic principles and applications of various types of internal combustion engines, with a major emphasis on reciprocating engines. It covers both spark ignition and compression ignition engines—as well as those operating on four-stroke cycles and on two stroke cycles—ranging in size from small model airplane engines to the larger stationary engines.

Features

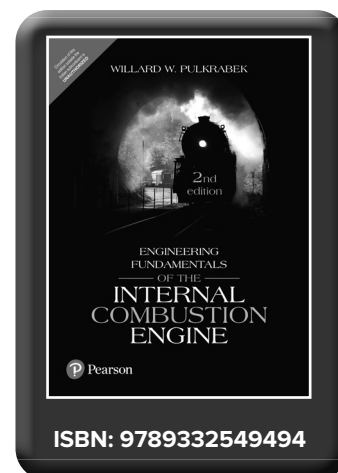
- NEW - Added and expanded topics—i.e., variable valve control; fuel injection; hydrogen fuel; fuel cells; and noise pollution.
- NEW - Real data from actual engines.
- NEW - Over 50 new worked example and review problems—Combine with open-ended design problems in each chapter.
- NEW - Added and improved figures throughout.
- NEW - Added historical notes.
- Use of both SI units and English units—With a conversion tables of SI and English units of common parameters used in engine work found in the Appendix.

Contents

1. Introduction.
2. Operating Characteristics.
3. Engine Cycles.
4. Thermochemistry and Fuels.
5. Air and Fuel Induction.
6. Fluid Motion within Combustion Chamber.
7. Combustion.
8. Exhaust Flow.
9. Emissions and Air Pollution.
10. Heat Transfer in Engines.
11. Friction and Lubrication.

About the Author

Willard W. Pulkrabek, University of Wisconsin - Platteville



Heat & Mass Transfer

Heat and Mass Transfer

Amit Pal, Shashank Mohan

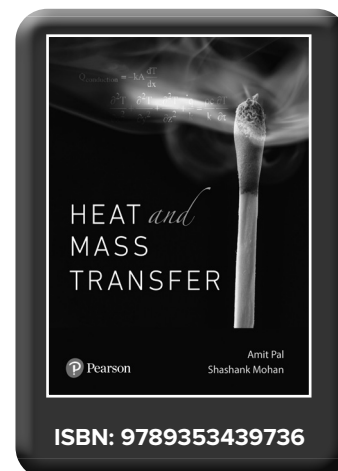
Pages: 874

Year: 2019



About the Book

The First edition of HEAT AND MASS TRANSFER has been published to serve undergraduate students concerning with this extremely important domain of engineering science. The book is written to gradually build up the concepts and inculcate mathematical abilities in students to solve real life problems in Heat and Mass Transfer analysis. Book has been designed to make it student friendly, interesting and engaging with special focus to provide a meaningful, correct and lucid explanation of the underlying concepts.



Features

- Building up stepwise concepts with proper interlinking and apt illustrations.
- Exhaustive and In-depth coverage of subject.
- Plethora of Solved Examples, Multiple Choice Questions and Review Questions.
- Coverage of Competitive and University Exam questions.

Contents

- | | |
|--|--|
| 1. Introduction to Heat Transfer | 7. Heat Transfer by Forced Convection |
| 2. Fundamentals of Conduction and Governing Equations | 8. Heat Transfer by Free Convection |
| 3. Unsteady State Conduction | 9. Boiling and Condensation |
| 4. Numerical Approach for Solving Heat Conduction Problems | 10. Heat Exchangers |
| 5. Heat Transfer from Extended Surfaces | 11. Mass Transfer |
| 6. Fundamentals of Convection | 12. Thermal Radiations: Process and Properties |
| | 13. Radiation Heat Exchange Between Surfaces |

About the Author(s)

Amit Pal, Department of Mechanical Engineering, Delhi Technological University, Delhi.

Shashank Mohan, Department of Mechanical Engineering, KIET Group of Institutions, Ghaziabad, Uttar Pradesh.

Heat Transfer, 4/e

Alan Chapman

Pages: 624

Year: 2016

About the Book

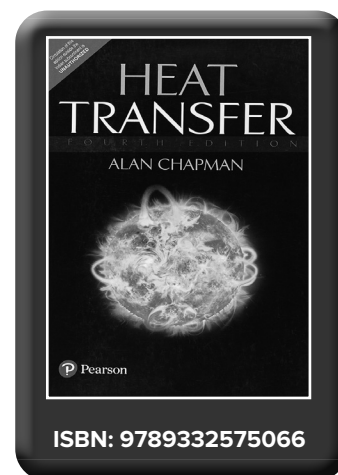
This text on heat transfer offers basic graduate engineering students a solid foundation in the subjects of conduction, convection, radiation, and phase-change, in addition to the related topic of heat transfer. It presents the fundamental concepts in a fairly rigorous manner, while showing how to analytically obtained facts can be applied with meaningful results to a real physical problem.

Features

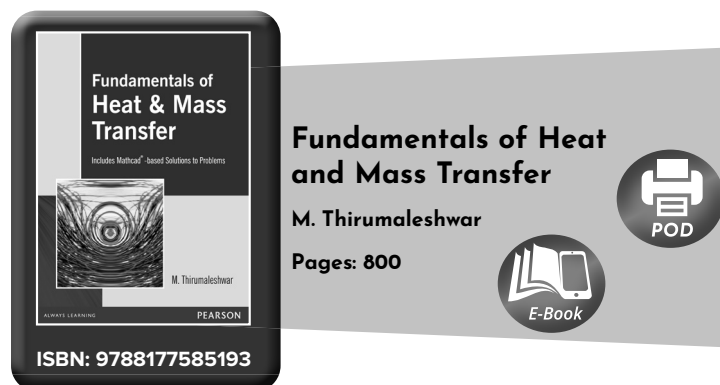
- Worked out examples are included throughout the work and numerous problems for student exercises are supplied with most chapters.
- The solution of problems involving the combined modes of conduction, convection and radiation has been discussed in detail.
- Appendix material is provided on certain mathematical techniques of heat conduction.
- Modern applications such as space radiators, heat pipes and solar collectors are explained in detail.

About the Author

Alan Chapman, Rice University



➡ ALSO AVAILABLE...



Machine Design

Machine Design, 2/e

U. C. Jindal

Pages: 900

Year: 2024



About the Book

Machine Design, 2e explains the design of machine elements and provides a comprehensive survey of machine elements and their analytical design methods. Besides explaining the fundamentals of the tools and techniques necessary to facilitate design calculations, the text also includes extensive data on various aspects of machine elements, manufacturing considerations and materials. The extensive pedagogical features make the text student friendly and provide pointers for fast recapitulation.

Features

- Chapter Objectives set the lesson plan for students and instructors by providing precise information about the chapter.
- An excellent selection of more than 300 solved problems which go much beyond the simple formulae substitution examples.
- More than 600 detailed line diagrams of machine parts to enable visualization and elucidation of the concepts.
- Practical Applications lists the real-life applications of key machine elements.
- Case Studies structured as a set of design projects to aid readers in the design of components used in the industry, such as line shafting, plumber block, screw jack, coupling on shaft, multi-throw crankshaft, etc. with ease.

Contents

Part I: General Topics

1. Introduction
2. Engineering Materials
3. Mechanics of Solids
4. Manufacturing Considerations
5. Introduction to Pressure Vessels
6. Levers
7. Struts and Columns
8. Springs

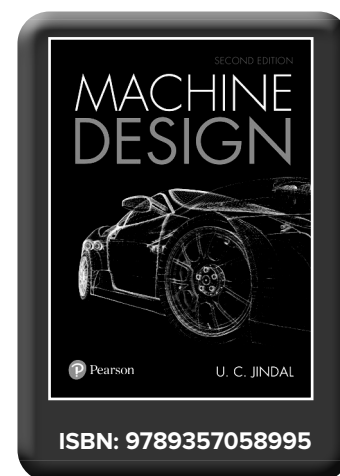
Part II: Joints

9. Threaded Fasteners

10. Pipes and Pipe Joints
11. Riveted Joints
12. Welded Joints
13. Cotter and Knuckle Joints

Part III: Power Transmission

14. Keys and Couplings
15. Shafts
16. Power Screws
17. Sliding Contact Bearings
18. Rolling Bearings
19. Flywheel



Part IV: Friction Drive

20. Flat Belt Drive
21. V-Belt Drive
22. Friction Clutches
23. Brakes
24. Rope Drive

Part V: Gear Drive

25. Gears

26. Helical Gears

27. Straight Bevel Gears
28. Worms and Worm Wheel Set
29. Gear Box

Part VI: Miscellaneous Topics

30. Chain Drive
31. Seals, Packings and Gaskets

About the Author

Dr U. C. Jindal is former Professor and Head of the Department of Mechanical Engineering, Delhi College of Engineering. He completed his MTech from IIT Kanpur and did his PhD on Experimental Stress Analysis from the University of Delhi. For the last 45 years Dr Jindal has been involved in teaching, research and development activities in the mechanics group of subjects—engineering mechanics, strength of materials, machine design, theory of machines and materials science.

Design of Machine Elements, Revised 8/e (SI Edition)

M. F. Spotts, Terry E. Shoup, L. E. Hornberger

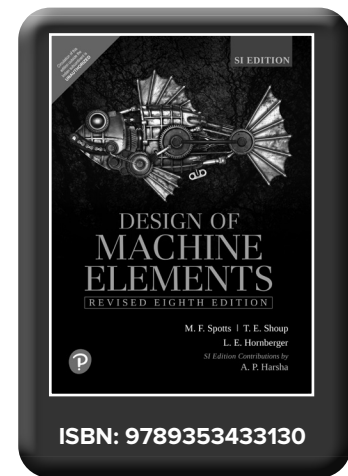
Pages: 736

Year: 2019



About the Book

Now in its revised eighth edition, the book has been completely SI metricated. This classic textbook on machine-design text contains 12 self-contained chapters covering the fundamental principles of this important branch of mechanical engineering. The material is drawn from a variety of sources and makes extensive use of structured computational examples to illustrate design applications.



Features

- A chapter devoted to form-synthesis of machine parts to enable the reader to critique existing machine assemblages with a view toward creating improved designs.
- The book website contains 54 Microsoft Excel spreadsheet modules to assist with the implementation of complex design tasks. Most of these modules now feature drop-down menus, as well as dual-unit capabilities.
- A review of the fundamentals of the strength of materials.
- Independent chapters that can be studied in any order to accommodate a variety of learning modes.

Contents

- | | |
|--|------------------------------------|
| 1. Fundamental Principles | 7. Welded and Riveted Connections |
| 2. Working Stresses and Failure Theories | 8. Lubrication |
| 3. Design of Shafts | 9. Ball and Roller Bearings |
| 4. Springs | 10. Spur Gears |
| 5. Screws | 11. Helical, Bevel and Worm Gears |
| 6. Belts, Clutches, Brakes, and Chains | 12. Miscellaneous Machine Elements |

About the Author(s)

M. F. Spotts, Professor Emeritus of Mechanical Engineering Department North Western University.

T. E. Shoup Department of Mechanical Engineering Santa Clara University

L. E. Hornberger, Department of Mechanical Engineering Santa Clara University.

A P Harsha - Professor at Department of Mechanical Engineering at IIT BHU, Varanasi.

Machine Design, 5/e

Robert L. Norton

Pages: 1092

Year: 2018



About the Book

Machine Design, 5e presents the subject matter in an up-to-date and thorough manner with a strong design emphasis. This textbook emphasizes failure theory and analysis as well as the synthesis and design aspects of machine elements. The book points out the commonality of the analytical approaches needed to design a wide variety of elements and emphasizes the use of computer-aided engineering as an approach to the design and analysis of these classes of problems.

Features

- **NEW** - New sections covering the fundamentals of kinematics have been added to Chapter 3. These will be of value in those curricula where kinematics has been added to the machine design course syllabus.
- **Case Studies** - The text is structured around a series of ten case studies that represent realistic design problems. These case studies present different aspects of the same design problem in successive chapters. The case studies provide a series of machine design projects throughout the book that contain various combinations

of the elements normally dealt with in this type of text. The assemblies contain some collection of elements such as links subjected to combined axial and bending loads, column members, shafts in combined bending and torsion, gearsets under alternating loads, return springs, fasteners under fatigue loading, rolling element bearings, etc.

- **NEW** - Over 90 problems are added or revised with all being in SI units.

Contents

Part I Fundamentals

1. Introduction to Design
2. Materials and Processes
3. Kinematics and Load Determination
4. Stress, Strain, and Deflection
5. Static Failure Theories

6. Fatigue Failure Theories
7. Surface Failure
8. Finite element Analysis

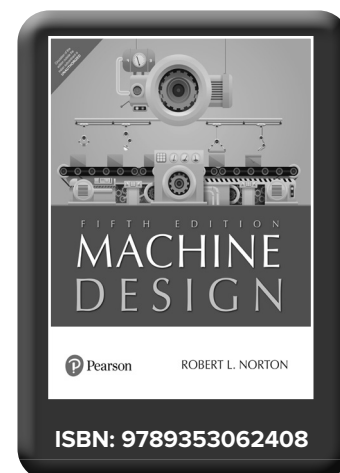
Part II Machine Design

9. Design Case Studies
10. Shafts, Keys, and Couplings
11. Bearings and Lubrication
12. Spur Gears
13. Helical, Bevel, and Worm Gears

14. Spring Design
15. Screws and Fasteners
16. Weldments
17. Clutches and Brakes

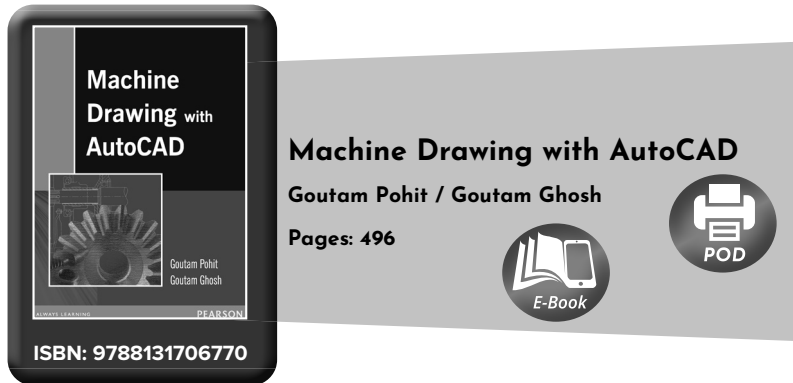
About the Author

Robert L. Norton earned undergraduate degrees in both mechanical engineering and industrial technology at Northeastern University and an MS in engineering design at Tufts University.



Machine Drawing

➡ MACHINE DRAWING AVAILABLE TITLES



Manufacturing Technology/Production Technology

Manufacturing Engineering & Technology, 8/e by Kalpakjian

Serope Kalpakjian, Steven R. Schmid

Pages: 1316

Year: 2023

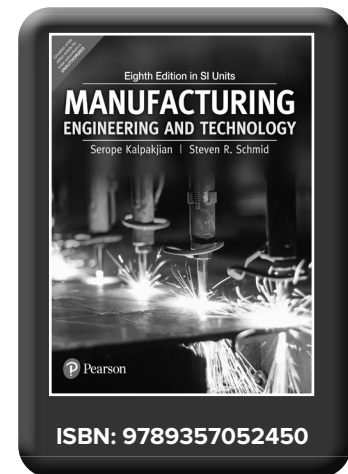


About the Book

In Manufacturing Engineering and Technology, 8th Edition in SI Units, the authors continue their efforts to present a comprehensive, balanced, and most importantly, an up-to-date coverage of the science, engineering, and technology of manufacturing. It places an emphasis on the interdisciplinary nature of every manufacturing activity, including complex interactions between materials, design, process, and manufacturing process and operations. With comprehensive coverage of all relevant topics and superior graphics, this text provides a solid background for manufacturing students and serves as a valuable reference text for professionals.

Features

- Updated Chapter 20 on Additive Manufacturing now includes mass customization; distributed manufacturing; composite AM; projection stereolithography; continuous liquid interface production (CLIPS); wire and arc AM; bioprinting; architectural applications of AM; conformal cooling; expanded section on design for AM.
- Several new case studies on topics like High-strength steels in automobiles, Tesla automobile design and manufacture, A die-cast magnesium litigate, Single-point incremental forming, Implications of powder reuse, Machining aerospace parts from monolithic aluminum, Gear grinding with engineered abrasives, Flexible Arduino and AM of athletic shoes have been added to help give students a perspective on real-world applications.
- Part IX: Manufacturing in a Competitive Environment of the book is thoroughly updated with new topics like microcontrollers; cloud computing; cybersecurity; gain scheduling; cobot; design considerations; cloud storage; expansion of ERP and MES; ass customization; Internet of Things; digital twin; life-cycle engineering; energy use in manufacturing.



Contents

1. General Introduction:

Part I: Fundamentals of Materials: behavior and Manufacturing Properties

2. The Structure of Metals
3. Mechanical Behavior, Testing, and Manufacturing Properties of Materials
4. Physical Properties of Materials
5. Metal Alloys: Their Structure and Strengthening by Heat Treatment
6. Ferrous Metals and Alloys: Production, General Properties, and Applications
7. Nonferrous Metals and Alloys: Production, General Properties, and Applications
8. Polymers: Structure, General Properties, and Applications
9. Ceramics, Glass, Graphite, Diamond, and Nanomaterials: Structure, General Properties, and Applications
10. Composite Materials: Structure, General Properties, and Applications

PART II: Metal-casting Processes and Equipment

11. Fundamentals of Metal Casting
12. Metal-casting Processes and Equipment
13. Metal Casting: Design, Materials, and Economics

PART III: Forming and Shaping processes and Equipment

14. Metal-rolling Processes and Equipment
15. Metal-forging Processes and Equipment
16. Metal Extrusion and Drawing Processes and Equipment
17. Sheet-Metal Forming Processes and Equipment
18. Powder Metal Processes and Equipment
19. Ceramics, Glasses, and Superconductors: Processing and Equipment
20. Plastics and Composite Materials: Forming and Shaping
21. Additive Manufacturing

PART IV: Machining Processes And machine Tools

22. Fundamentals of Machining
23. Cutting-Tool Materials and Cutting Fluids
24. Machining Processes: Turning and Hole Making
25. Machining Processes: Milling, Broaching, Sawing, Filing, and Gear Manufacturing
26. Machining Centers, Machine-tool Structures, and Machining Economics
27. Abrasive Machining and Finishing Operations
28. Advanced Machining Processes

PART V: Micromanufacturing And fabrication of Microelectronic Devices

29. Fabrication of Microelectronic Devices
30. Fabrication of Microelectromechanical Devices and Systems and Nanoscale Manufacturing

PART VI: Joining Processes And equipment

31. Fusion Welding Processes
32. Solid-State Welding Processes
33. Brazing, Soldering, Adhesive-bonding, and Mechanical Fastening Processes

PART VII: Surface Technology

34. Surface Roughness and Measurement; Friction, Wear, and Lubrication
35. Surface Treatments, Coatings, and Cleaning

PART VIII: Engineering Metrology, instrumentation, and Quality Assurance

36. Surface Treatments, Coatings, and Cleaning
37. Quality Assurance, Testing, and Inspection

PART IX: Manufacturing in A competitive Environment

38. Automation of Manufacturing Processes and Operations
39. Computer-aided Manufacturing
40. Computer-integrated Manufacturing Systems
41. Product Design and Manufacturing in a Competitive Environment

About the Author(s)

Serope Kalpakjian is Professor emeritus of Mechanical and Materials Engineering, at the Illinois Institute of Technology

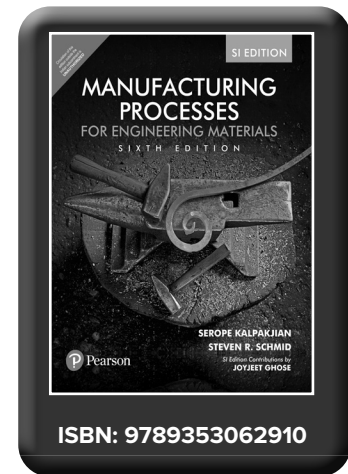
Steven R. Schmid is professor of Aerospace and Mechanical Engineering, at the University of Notre Dame.

Manufacturing Processes for Engineering Materials, 6/e (SI Edition)

Serope Kalpakjian, Steven R. Schmid

Pages: 1136

Year: 2018



About the Book

Manufacturing Processes for Engineering Materials, 6e (SI Units) addresses advances in all aspects of manufacturing, clearly presenting comprehensive, up-to-date, and balanced coverage of the fundamentals of materials and processes.

With the Sixth Edition, students will learn to properly assess the capabilities, limitations, and potential of manufacturing processes and their competitive aspects. The numerous examples and case studies throughout the book help to develop a perspective on the real-world applications of the topics described in the book. As in previous editions, this text maintains the same number of chapters while continuing to emphasize the interdisciplinary nature of all manufacturing activities, including the complex interactions among materials, design, and manufacturing processes.

Features

- Chapter and Content Updates include:
 - Economic multiplier; technology readiness level; case study on three-dimensional printing of guitars; expansion of general trends in manufacturing.
 - Advanced high-strength steels; 3rd generation steels; expansion of discussion on magnesium; chromium; rare-earth metals.
 - Environmentally-friendly lubricants; validation of products and processes.
 - Strip casting; mold ablation; design of ribs in castings; computer modeling of casting; a new case study.
 - Servo presses; electrically-assisted forging; the Hall process; a new case study.
- Single-point incremental forming; age forming; hot stamping.
- Electrically-conductive polymers; big-area additive manufacturing; laser engineered net shaping; friction stir modeling; the Maker movement; design for additive manufacturing.
- Expansion of metal injection molding; dynamic compaction of powders; combustion synthesis; pseudo-isostatic pressing; roll densification; graphene.
- Expansion of friction welding; case study on Blisks.
- The Questions, Problems, and Design problems at the end of each chapter have been significantly expanded.

Contents

1. Introduction
2. Fundamentals of the Mechanical Behavior of Materials
3. Structure and Manufacturing Properties of Metals
4. Tribology, Metrology and Product Quality
5. Casting Processes and Heat Treatment
6. Bulk Deformation Processes
7. Sheet-Metal Processes
8. Machining Processes
9. Material-Removal Processes
10. Polymer Processing and Additive Manufacturing
11. Powder Metallurgy and Processing of Ceramics and Glasses
12. Joining and Fastening Processes
13. Micro- and Nanomanufacturing
14. Automation of Manufacturing Processes and Operations
15. Computer-Integrated Manufacturing Systems
16. Competitive Aspects of Product Design and Manufacturing

About the Author(s)

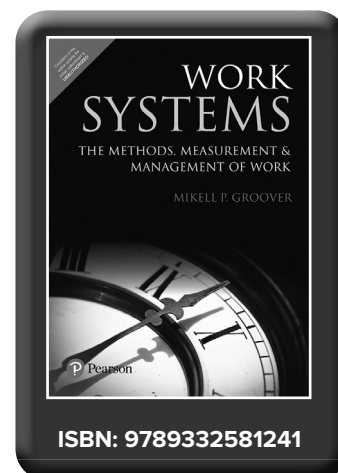
Serope Kalpakjian is Professor emeritus of Mechanical and Materials Engineering, at the Illinois Institute of Technology
Steven R. Schmid is professor of Aerospace and Mechanical Engineering, at the University of Notre Dame.

Work Systems: The Methods, Measurement & Management of Work

Mikell P. Groover

Pages: 820

Year: 2017



About the Book

Divided into two major areas of study - work systems, and work methods, measurement, and management - this guidebook provides up-to-date, quantitative coverage of work systems and how work is analyzed and designed. Thorough, broad-based coverage addresses nearly all of the traditional topics of industrial engineering that relate to work systems and work science.

Features

- Work systems discussion - Includes topics such as worker-machine systems, assembly lines, service operations, office work, projects, and material handling.
- Work methods, measurement, and management coverage -Addresses methods engineering, operations analysis, facilities planning, time study, ergonomics, lean production, six sigma quality programs, work organization, and compensation systems.
- Thirty chapters are organized into six parts - Work Systems and How They Work; Methods Engineering and Layout Planning; Time Study and Work Measurement; New Approaches in Process Improvement and Work Management; Ergonomics and Human Factors in the Workplace, and Traditional Topics in Work Management.
- Unique historical notes - Provide a valuable perspective on the various techniques and topics discussed.
- Emphasis on the management aspects of work - Covers topics such as organization theory, wage administration, worker motivation, and job evaluation.
- Broadened scope of time and motion study - Addresses the systems

Contents

1. Introduction

Part I Work Systems and How They Work

2. Manual Work and Worker-machine Systems
3. Work Flow, Batch Processing, and Work Cells
4. Manual Assembly Lines
5. Logistics Operations
6. Service Operations and Office Work
7. Projects and Project Management

Part II Methods Engineering and Layout Planning

8. Introduction to Methods Engineering and Operations Analysis
9. Charting and Diagramming Techniques for Operations Analysis
10. Motion Study and Work Design
11. Facility Layout Planning and Design

Part III Time Study and Work Measurement

12. Introduction to Work Measurement
13. Direct Time Study
14. Predetermined Motion Time Systems
15. Standard Data Systems
16. Work Sampling

17. Computerized Work Measurement and Standards Maintenance

18. The Economics and Applications of Time Standards
19. Learning Curves

PART IV New Approaches in Process Improvement and Work Management

20. Lean Production
21. Six Sigma and Other Quality Programs

Part V Ergonomics and Human Factors in the Workplace

22. Introduction to Ergonomics and Human Factors
23. Physical Ergonomics: Work Physiology and Anthropometry
24. Cognitive Ergonomics: the Human Sensory System and Information Processing
25. The Physical Work Environment
26. Occupational Safety and Health

Part VI Traditional Topics in Work Management

27. Work Organization
28. Worker Motivation and the Social Organization at Work
29. Job Evaluation and Performance Appraisal
30. Compensation Systems

Mechanical Measurements, Revised 6/e (SI Edition)

Thomas G. Beckwith, John H. Lienhard V, Roy D. Marango

Pages: 792

Year: 2020

About the Book

Pearson introduces the Revised Sixth Edition of Mechanical Measurements in SI Units. This much-anticipated revision of the text continues to set the standard. Emphasizing precision and clarity, the authors cover fundamental issues common to all areas of measurement in Part One, then present individual chapters on applied areas of measurement in Part Two. The text's modular format makes it accessible to undergraduate students of most engineering disciplines, particularly mechanical engineering, aerospace engineering, and engineering technology.

Features

- SI Units - The text is now completely SI metricated.
- Flexible presentation - Fits several different course formats and accommodates a wide variety of skill levels.
- Separate areas of applied measurements - Help students see the relevance of mechanical measurement to their own field of interest and offer motivation by addressing real-world measurement problems

Contents

Part 1: Fundamentals of Mechanical Measurement

1. The Process of Measurement: An Overview
2. Standards and Dimensional Units of Measurement
3. Assessing and Presenting Experimental Data
4. The Analog Measure and: Time-Dependent Characteristics

Part 2: Applied Mechanical Measurements

10. Measurement of Count, EPUT, Time Interval, and Frequency Measurement of Count, Events per Unit Time, Time Interval, and Frequency
11. Displacement and Dimensional Measurement
12. Strain and Stress: Measurement and Analysis
13. Measurement of Force and Torque

Part 3: Appendices

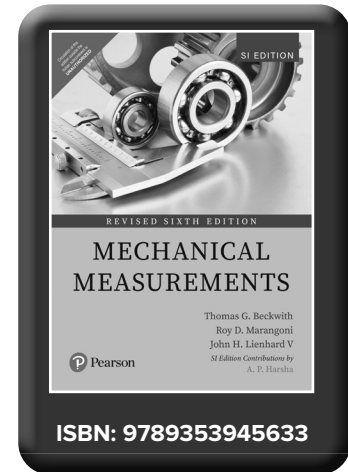
- A Standards and Conversion Equations
- B Theoretical Basis for Fourier Analysis
- C Number Systems
- D Some Useful Data
- E Stress and Strain Relationships
- E.1 The General Plane Stress Situation
- E.2 Direction and Magnitudes of Principal Stresses
- E.3 Variation in Shear Stress with Direction

5. The Response of Measuring Systems
6. Sensors
7. Signal Conditioning
8. Digital Techniques in Mechanical Measurements
9. Readout and Data Processing

14. Measurement of Pressure
15. Measurement of Fluid Flow
16. Temperature Measurements
17. Measurement of Motion
18. Acoustical Measurements

- E.4 Shear Stress on Principal Planes
- E.5 General Stress Equations in Terms of Principal Stresses
- E.6 Mohr's Circle for Stress
- E.7 Strain at a Point
- F Statistical Tests of Least Squares Fits

Answers to Selected Problems



About the Author(s)

Thomas G. Beckwith, University of Pittsburgh

Roy D. Marangoni, University of Pittsburgh

John H. Lienhard, V, Massachusetts Institute of Technology Mechanical Engineering

SI Edition contributions by

A. P. Harsha, Department of Mechanical Engineering, Indian Institute of Technology (BHU), Varanasi

Machine Tool Practices, 9/e

Richard R. Kibbe, John E. Neely, Warren T. White, Roland O. Meyer

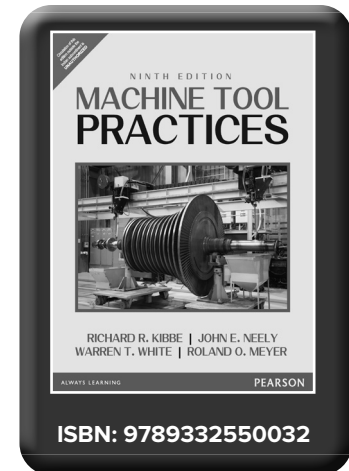
Pages: 820

Year: 2015



About the Book

This text was developed to provide a richly illustrated, intensely visual treatment of basic machine tool technology and related subjects, including measurement and tools, reading drawings, mechanical hardware, hand tools, metallurgy, and the essentials of CNC. Covering introductory through advanced topics, Machine Tool Practices is formatted so that it may be used in a traditional lab-lecture program or a self-paced program. The book is divided into major sections that contain many instructional units. Each unit contains listed objectives, self tests with answers, and boxed material covering shop tips, safety, and new technologies.



Features

NEW TO THIS EDITION

- Heavily illustrated throughout including 80% new artwork in this edition!
 - ◆ 600 new photos!
 - ◆ 1,500 revised line drawings!
- Expanded/Updated CNC content.
- Additional CAM coverage.

HALLMARK FEATURES

- Comprehensive approach presents the major core subject areas needed by today's machinists.
- Includes hundreds of photos of actual machining operations.
- Graphic explanations highlight important concepts and common errors and difficulties encountered by machinists.
- Many units are designed around specific projects that provide performance experience for the student.
- Self tests at the end of most units help students evaluate their own progress and understanding of the text material.

Contents

SECTION A

Introduction

1. Shop Safety
2. Mechanical Hardware
3. Reading Drawings

SECTION B

Hand Tools

1. Arbor and Shop Presses
2. Work-Holding and Hand Tools
3. Hacksaws

4. Files

5. Hand Reamers

6. Identification and Uses of Taps

7. Tapping Procedures

8. Thread-Cutting Dies and Their Uses

9. Off-Hand Grinding

SECTION C

Dimensional Measurement

1. Systems of Measurement
2. Using Steel Rules

3. Using Vernier, Dial, and Digital Instruments for Direct Measurements
4. Using Micrometer Instruments
5. Using Comparison Measuring Instruments
6. Using Gage Blocks
7. Using Angular Measuring Instruments
8. Tolerances, Fits, Geometric Dimensions, and Statistical Process Control

SECTION D

Materials

1. Selection and Identification of Steels
2. Selection and Identification of Nonferrous Metals
3. Hardening, Case Hardening, and Tempering
4. Annealing, Normalizing, and Stress Relieving
5. Rockwell and Brinell Hardness Testers

SECTION E

Layout

1. Basic Semiprecision Layout Practice
2. Basic Precision Layout Practice

SECTION F

Preparation for Machining Operations

1. Machinability and Chip Formation
2. Speeds and Feeds for Machine Tools
3. Cutting Fluids
4. Using Carbides and Other Tool Materials>

SECTION G

Sawing Machines

1. Using Reciprocating and Horizontal Band Cutoff Machines
2. Abrasive and Cold Saws
3. Preparing to Use the Vertical Band Machine
4. Using the Vertical Band Machine

SECTION H

Drilling Machines

1. The Drill Press
2. Drilling Tools
3. Hand Grinding of Drills on the Pedestal Grinder
4. Operating Drilling Machines
5. Countersinking and Counterboring
6. Reaming in the Drill Press

SECTION I

Turning Machines

1. The Engine Lathe
2. Toolholders and Toolholding for the Lathe
3. Cutting Tools for the Lathe
4. Lathe Spindle Tooling
5. Operating the Machine Controls
6. Facing and Center Drilling
7. Turning between Centers

8. Alignment of the Lathe Centers
9. Other Lathe Operations
10. Sixty-Degree Thread Information and Calculations
11. Cutting Unified External Threads
12. Cutting Unified Internal Threads
13. Cutting Tapers
14. Using Steady and Follower Rests
15. Additional Thread Forms
16. Cutting Acme Threads on the Lathe

SECTION J

Vertical Milling Machines

1. Vertical Spindle Milling Machines
2. Cutting Tools and Cutter Holders for the Vertical Milling Machine
3. Setups on the Vertical Milling Machine
4. Vertical Milling Machine Operations
5. Using the Offset Boring Head

SECTION K

Horizontal Spindle Milling Machines

1. Horizontal Spindle Milling Machines
2. Types of Spindles, Arbors, and Adapters
3. Arbor-Driven Milling Cutters
4. Work-Holding Methods and Standard Setups
5. Machine Setup and Plain Milling
6. Using Side Milling Cutters
7. Using Face Milling Cutters on the Horizontal Milling Machine

SECTION L

Grinding and Abrasive Machining Processes

1. Selection and Identification of Grinding Wheels
2. Truing, Dressing, and Balancing of Grinding Wheels
3. Grinding Fluids
4. Horizontal Spindle Reciprocating Table Surface Grinders
5. Work Holding on the Surface Grinder
6. Using the Surface Grinder
7. Problems and Solutions in Surface Grinding
8. Center-Type Cylindrical Grinders
9. Using the Cylindrical Grinder
10. Universal Tool and Cutter Grinder

SECTION M

Computer Numerical Control and Other Advanced Machining Processes

1. CNC Machine Tool Programmable Axes and Position Dimensioning Systems
2. CNC Programming
3. CNC Tooling
4. Other Advanced Machining Processes

About the Author(s)

Richard R. Kibbe served his apprenticeship in the shipbuilding industry and was graduated as a journeyman marine machinist. He holds an Associate in Arts degree in applied arts from Yuba Community College with an emphasis in machine tool technology. He also holds Bachelor's and Master's degrees from the California State University with an emphasis in machine tool manufacturing technology.

Roland O. Meyer spent the first 20 years of his career in the metal-working industry as a tool and die maker, machinist and worked in machine design and manufacturing. He completed his apprenticeship as a tool and die maker at Siemens in Germany and continued there as a journeyman building progressive punching dies.

John E. Neely grew up in the Pacific Northwest and entered the Army to serve in World War II. The life John E. Neely is characterized by hard work, a variety of successes, and mentoring many others who became a part of his life.

Warren White apprenticed as an Optical Instrument Maker with Land-Air, Inc. After military service with the Army Air Defense Board he obtained a graduate degree in Psychology at Clark University. His interest in both learning theory and machine tools led to employment at Foothill College in the Engineering Department.

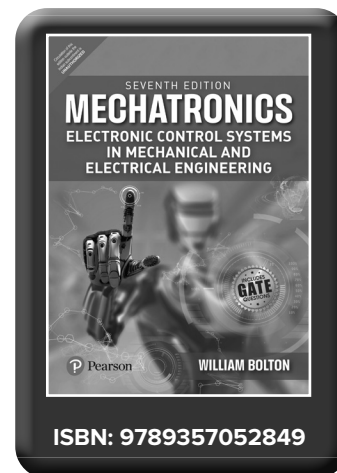
Mechatronics

Mechatronics, 7/e

William Bolton

Pages: 704

Year: 2023



About the Book

The integration of electronic engineering, mechanical engineering, control and computer engineering – Mechatronics – lies at the heart of the innumerable gadgets, processes and technology without which modern life would seem impossible. From auto-focus cameras to car engine management systems, and from state-of-the-art robots to the humble washing machine, Mechatronics has a hand in them all. This book presents a clear and comprehensive introduction to the area. Practical and applied, it helps you to acquire the mix of skills you will need to comprehend and design mechatronic systems. It also goes much deeper, explaining the very philosophy of mechatronics, and, in doing so, provides a truly interdisciplinary and integrated approach to engineering.

Features

- Updated coverage of mechatronic system components, including extended coverage of encoders, position sensitive detectors and force sensitive resistors.
- New material on Atmega microcontrollers including applications and programming examples.
- Topical discussion and examples of fuzzy logic and neural control systems.
- Applications and case studies have been revised across the book, with fascinating examples including automated guided vehicles, artificial hands, fuzzy logic washing machines, to help gain a modern and practical understanding.

contents

- | | |
|--|------------------------------------|
| 1. Introducing mechatronics | 13. Input/output systems |
| 2. Sensors and transducers | 14. Programmable logic controllers |
| 3. Signal conditioning | 15. Communication systems |
| 4. Digital signals | 16. Fault finding |
| 5. 5.Digital logic | 17. Basic system models |
| 6. Data presentation systems | 18. System models |
| 7. Pneumatic and hydraulic actuation systems | 19. Dynamic responses of systems |
| 8. Mechanical actuation systems | 20. System transfer functions |
| 9. Electrical actuation systems | 21. Frequency response |
| 10. Microprocessors and microcontrollers | 22. 22 Closed-loop controllers |
| 11. Assembly language | 23. Artificial intelligence |
| 12. C language | 24. Mechatronic systems |

About the Author

William Bolton was formerly a Consultant to the Further Education Unit, Head of Research and Development and Monitoring at BTEC and a UNESCO consultant.

Foundations of MEMS, 2/e

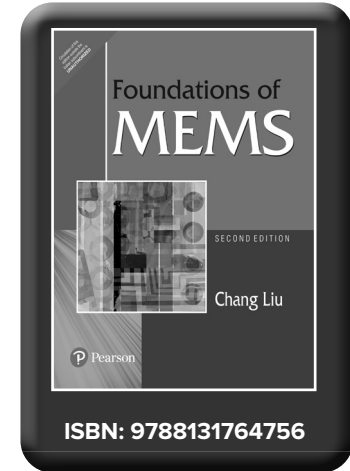
Chang Liu

Pages: 576

Year: 2011

**About the Book**

Foundations of MEMS is an entry-level text designed to systematically teach the specifics of MEMS to an interdisciplinary audience. Liu discusses designs, materials, and fabrication issues related to the MEMS field by employing concepts from both the electrical and mechanical engineering domains and by incorporating evolving microfabrication technology—all in a time-efficient and methodical manner. A wealth of examples and problems solidify students' understanding of abstract concepts and provide ample opportunities for practicing critical thinking.

**Features**

Concise background information from several engineering domains:

- Makes students conversant with unfamiliar concepts and practices that are needed to solve MEMS problems.
- Presents exciting new opportunities for a student and practitioner of MEMS to become involved in specific application domains, such as bioengineering, chemistry, nanotechnology, optical engineering, power and energy, and wireless communication.
- Systematic teaching of materials, design, and fabrication issues, in an ascending and widening spiral introduces topics in an ordered and logical progression.
- Critical-thinking challenges foster a deeper understanding of the subject matter and show students how to think like engineers.
- Extensive examples and homework problems help teachers explain difficult concepts and assist students in practicing these concepts.
- Current data and up-to-date materials keep students and researchers abreast of the latest technologies.

Contents

- | | |
|---|---|
| 1. Introduction | 8. Magnetic Actuation |
| 2. First-Pass Introduction to Microfabrication | 9. Summary of Sensing and Actuation Methods |
| 3. Review of Essential Electrical and Mechanical Concepts | 10. Bulk Micromachining and Silicon Anisotropic Etching |
| 4. Electrostatic Sensing and Actuation | 11. Surface Micromachining |
| 5. Thermal Sensing and Actuation | 12. Process Synthesis: Putting It all Together |
| 6. Piezoresistive Sensors | 13. Polymer MEMS |
| 7. Piezoelectric Sensing and Actuation | 14. Micro Fluidics Applications |
| | 15. Case Studies of Selected MEMS Products |

About the Author

Chang Liu received his M.S. and Ph.D. degrees from the California Institute of Technology in 1991 and 1995, respectively. His Ph.D. thesis was titled Micromachined sensors and actuators for fluid mechanics applications. In January 1996, he joined the Microelectronics Laboratory of the University of Illinois as a postdoctoral researcher. In January 1997, he became an assistant professor with major appointment in the Electrical and Computer Engineering Department and joint appointment in the Mechanical and Industrial Engineering Department. In 2003, he was promoted to the rank of Associate Professor with tenure. In 2007, Chang Liu joined Northwestern University (Evanston, Illinois) as a full professor of engineering. He established the MedX Laboratory to conduct advanced engineering research for medicine and health care.

Operations Research

Operations Research, 2/e

A. M. Natarajan, P. Balasubramani, A. Tamilarasi

Pages: 744

Year: 2014



About the Book

Operations research is the study of optimization techniques. Designed to cater to the syllabi requirements of Indian universities, this book on operations research reinforces the concepts discussed in each chapter with solved problems. A unique feature of this book is that with its focus on coherence and clarity, it hand-holds students through the solutions, each step of the way.

Features

- Graphical solution to linear programming problems discussed by means of appropriate examples.
- Economic interpretation of dual variables explained and various computational techniques elucidated.
- Applications of the simulation model in practical business problems illustrated.
- Detailed analysis of the critical path method (CPM) and the project evaluation review technique (PERT).
- Non-linear programming problems, quadratic programming and separable programming highlighted along with their applications.

Contents

- | | | |
|--|---|-------------------------------|
| 1. Basics of Operations Research | 5. Assignment Problem | 10. Replacement Models |
| 2. Linear Programming Problem (LPP) | 6. Dynamic Programming | 11. Inventory Models |
| 3. Advanced Topics in Linear Programming | 7. Decision Theory and Introduction to Quantitative Methods | 12. Queuing Models |
| 4. The Transportation Problem | 8. Theory of Games | 13. Network Models |
| | 9. Sequencing Models | 14. 14 Simulation |
| | | 15. 15 Non-Linear Programming |

About the Author(s)

A. M. Natarajan is Chief Executive Officer at Bannari Amman Institute of Technology, Sathyamangalam

P. Balasubramanie is Professor, Department of Computer Science and Engineering Kongu Engineering College Perundurai, Erode, Tamil Nadu

A. Tamilarasi is Professor, Department of Computer Science and Engineering Kongu Engineering College Perundurai, Erode, Tamil Nadu

➡ ALSO AVAILABLE...



Power Plant Engineering

Introduction to Power Plant Engineering

Amitava Sarkar, Pranab K Mondal

Pages: 800

Year: 2025



About the Book

Introduction to Power Plant Engineering provides an introduction to the core principles of power plant engineering, blending theoretical foundations with practical applications. With ample introductory material that is necessary for the understanding of most power plant systems, simplified mathematical formulations and detailed conceptual explanations, this text provides the readers with a holistic understanding on the subject. The book is an ideal offering for fundamental course on power plant technology/systems, intended for undergraduate students in Mechanical, Electrical, Power, Chemical, and Aerospace Engineering. Postgraduate students specializing in heat power engineering, and practicing engineers in power plant industries will also find this textbook extremely useful.

Features

- Detailed description and analysis of equipment in thermal power station like pulverized coal-fired boilers, fluidized bed boilers, cooling tower, boiler feed pump, fans, etc. have been provided
- Comprehensive discussion on common fuels, employed in thermal power stations and Environmental aspects of power generation
- Dedicated chapter on Energy Storage including classification of energy storage systems and the basic principles involved
- The chapter on Review of Electrical Systems included to provide the prerequisites - basics of electrical engineering - needed to understand electrical machines and control strategies relevant to power plants for branches other than electrical engineering
- A rich collection of solved and unsolved numerical problems included throughout the book to aid both conceptual clarity and practical applications

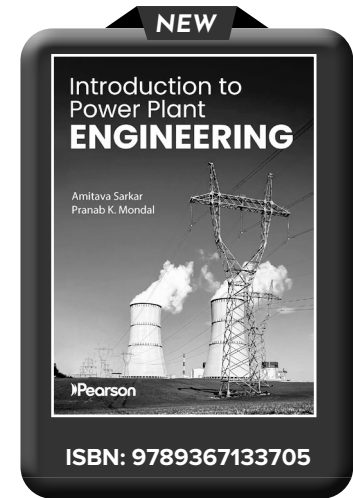
Contents

- | | | |
|---|--|--|
| 1. Chapter 1 Energy and Economics of Power Generation | Boiler Feed Pump | 15. Chapter 15 Gas Turbines |
| 2. Chapter 2 Review of Thermodynamics | 8. Chapter 8 Pulverization of Coal and Some Ash Related Issues | 16. Chapter 16 Nuclear Power |
| 3. Chapter 3 Vapour Power Cycles | 9. Chapter 9 Condenser, Cooling Tower and Feed Heaters | 17. Chapter 17 Energy Storage |
| 4. Chapter 4 Gas Power Cycles | 10. Chapter 10 Water Treatment | 18. Chapter 18 Renewable Energy |
| 5. Chapter 5 Fossil Fuels | 11. Chapter 11 Steam Turbines | 19. Chapter 19 Environmental Aspects of Power Generation |
| 6. Chapter 6 Fossil Fuel Based Utility Steam Generators | 12. Chapter 12 Plant Control | 20. Chapter 20 Review of Electrical Systems |
| 7. Chapter 7 Soot Blowers and | 13. Chapter 13 Hydel Power Plants | |
| | 14. Chapter 14 Diesel Power Plants | |

About the Author(s)

Amitava Sarkar, former Professor and Head of Mechanical Engineering in Jadavpur University, is a well-known figure in power plant engineering and has more than three decades of teaching experience in this field. Prof. Sarkar has served Mechanical Engineering Department of IEST Shibpur and NIT Silchar as a visiting professor and taught several courses in the field of thermal science and engineering.

Pranab K. Mondal, Associate Professor of Mechanical Engineering in IIT Guwahati, has more than ten years of teaching and research experiences in the field of thermo-fluid engineering. Prof. Mondal is a well-known researcher in IIT Guwahati in the field of thermo-fluid sciences and has pioneered several activities in emerging areas such as microfluidics, phytofluidics and microscale transport of heat.



Power Plant Engineering

R. K. Hegde

Pages: 912

Year: 2015



About the Book

Power Plant Engineering has been written to cater to the needs of budding mechanical engineers in their undergraduate study. Supplemented by clear illustrations and solved examples, the book provides a comprehensive coverage of topics at the required depth to students gain a firm foothold in the subject.

Features

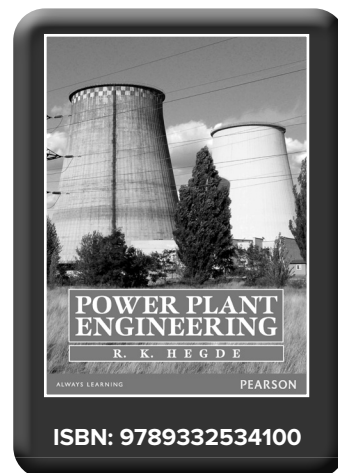
- Information on contemporary topics in power plant technology such as super critical boiler technology.
- Practical approach to delineate complex topics with visual aids and representational schemes.
- Exhaustive coverage of power generation from non-conventional sources of energy.
- Ample solved examples, multiple-choice and exercise questions for practice.

Contents

1. Introduction to Power Plants
2. Fuels and Combustion
3. Fuel-Handling Systems
4. Steam Power Plant
5. Steam Generator
6. Fluidized Bed Combustion
7. Draught System
8. Feed Water Treatment
9. Flow Through Nozzles
10. Steam Turbines
11. Steam Condenser and Circulating Water Systems
12. Gas Turbine Power Plant
13. Diesel Engine Power Plant
14. Power from Non-Conventional Sources
15. Hydroelectric Power Plant
16. Nuclear Power Plants
17. Power Plant Economics
18. Environmental Aspects of Power Station
19. Instrumentation and Equipments in Power Station

About the Author

R. K. Hegde is Professor, Department of Mechanical Engineering in Srinivas Institute of Technology, Mangalore, Karnataka. The author has more than 20 years of rich industrial and academic experience. Earlier he was involved in power plant operation and maintenance, handling high pressure FBC boilers, Babcock–Wilcox boilers, turbines and pumps. He worked in a power plant in maintenance and is also an authorized boiler operation engineer.



Refrigeration and Air Conditioning

Refrigeration and Air Conditioning

Manoj Kumar Gupta

Pages: 644

Year: 2024



About the Book

Refrigeration and Air Conditioning is a complete offering on the subject area with comprehensive treatment of the basic principles as well as the applications. With lucid exposition of the fundamental concepts along with numerous worked-out examples, well-labeled detailed illustrations, this book provides a holistic understanding of the subject.

Features

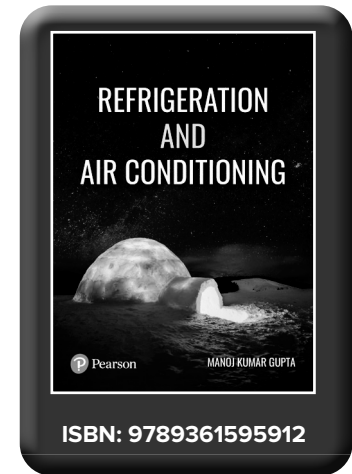
- Exhaustive coverage on Vapour Compression and Vapour Absorption Refrigeration Systems
- Detailed discussion on air conditioning systems and latest refrigerants
- Dedicated chapter on Applications and Appliances
- More than 200 detailed line diagrams to enable visualization and elucidation of the concepts
- More than 550 solved and unsolved problems to provide ample practice

Contents

1. Introduction
2. Air Cycle and Aircraft Refrigeration Systems
3. Vapour Compression Refrigeration System (VCRS)
4. Vapour Compression Refrigeration System Components
5. Refrigerants
6. Multi-Pressure VCR Systems
7. Vapour Absorption Refrigeration System (VARs)
8. Jet Ejector Refrigeration System
9. Other Refrigeration Methods
10. Psychrometry
11. Design Conditions
12. Psychrometry of All-air Air Conditioning Systems
13. Cooling and Heating Load Calculations
14. Air Conditioning Systems
15. Transmission and Distribution of Air
16. Applications and Appliances
17. Appendix A: Answers to Numerical Problems,
18. Appendix B: Thermodynamic Properties Tables,
19. Appendix C: P-h Charts and Psychrometric Chart

About the Author

Manoj Kumar Gupta, Dean Academic, Professor and Ex HOD, Department of Mechanical Engineering, Ujjain (Government) Engineering College, Ujjain, Madhya Pradesh



Principles of Refrigeration, 4/e

Roy J. Dossat

Pages: 512

Year: 2006

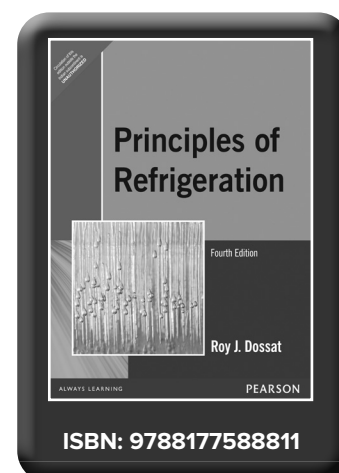


About the Book

Classic presentation of the principles, applications, and design of refrigeration systems and equipment. No special background in thermodynamics, physics, or calculus is required, as the essential concepts are reviewed in the first five chapters.

Contents

1. Pressure, Work, Power, Energy
2. Matter, Internal Energy, Heat, Temperature
3. Ideal Gas Processes
4. Saturated and Superheated Vapors
5. Psychrometric Properties of Air
6. Refrigeration and the Vapor Compression Systems
7. Cycle Diagrams and the Simple Saturated Cycle
8. Actual Refrigerating Cycles
9. Survey of Refrigeration Applications
10. Cooling Load Calculations
11. Evaporators
12. Performance of Reciprocating Compressors
13. System Equilibrium and Cycling Controls
14. Condensers and Cooling Towers
15. Fluid Flow, Centrifugal Liquid Pumps, Water and Brine Piping
16. Refrigerants
17. Refrigerant Flow Controls
18. Compressor Construction and Lubrication
19. Refrigerant Piping and Accessories
20. Defrost Methods—Low Temperature, Multiple Temperature, and Absorption Refrigeration Systems
21. Electric Motors and Control Circuits



Air Conditioning Principles and Systems, 4/e

Edward G Pita

Pages: 584

Year: 2018



About the Book

This text explores the fundamental concepts of air conditioning and their application to systems—explaining all concepts in a clear, practical manner, and focusing on problems and examples typically encountered on the job. It covers the latest, yet practical methods of load calculations, psychometrics, system design, and equipment description and performance.

Features

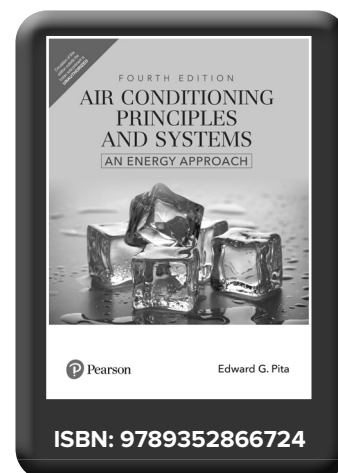
- Describes energy codes and standards, and examines each topic from an energy conservation viewpoint which is essential for all future work in the air conditioning field.
- Covers indoor air quality; air pollution from combustion; and the environmental requirements on refrigerants.
- Exhaustive Coverage of HVAC equipment description, performance, selection and specifications.
- Include example projects which provide students with hands-on learning experiences that require them to analyze how the system functions and is essential for installation, operation, and service as well as design.

Contents

1. An Air Conditioning Fable.
2. The Scope and Uses of Air Conditioning.
3. Physical Principles.
4. Heating Loads.
5. Furnaces and Boilers.
6. Hydronic Piping Systems and Terminal Units.
7. Cooling Load Calculations.
8. Psychometrics.
9. Fluid Flow in Piping and Ducts.
10. Piping, Valves, Ducts, and Insulation.
11. Fans and Air Distribution Devices.
12. Centrifugal Pumps, Expansion Tanks, and Venting.
13. Air Conditioning Systems and Equipment.
14. Refrigeration Systems and Equipment.
15. Automatic Controls.
16. Energy Utilization and Conservation.
17. Instrumentation, Testing, and Balancing.
18. Planning and Designing the HVAC System.
19. Solar Heating and Cooling Systems.

About the Author

Edward G. Pita was Professor Emeritus and Adjunct Professor in the Environmental Control Technology Department at New York City Technical College of the City University of New York. He received a B.S. degree from Purdue University, an M.S. degree from Columbia University, and a Ph.D. degree from the University of Maryland, all in mechanical engineering. He is a member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and is a registered professional engineer.



Robotics

Introduction to Robotics, 4/e

John J. Craig

Pages: 456

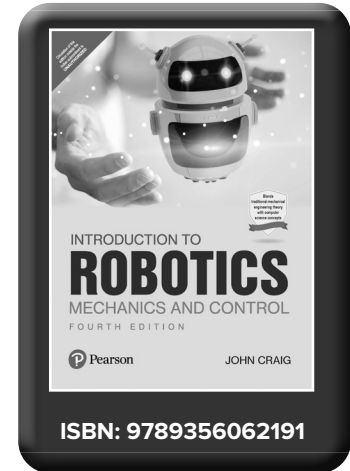
Year: 2022



About the Book

Since its original publication in 1986, Craig's Introduction to Robotics: Mechanics and Control has been the leading textbook for teaching robotics at the university level. Blending traditional mechanical engineering material with computer science and control theoretical concepts, the text covers a range of topics, including rigid-body transformations, forward and inverse positional kinematics, velocities and Jacobians of linkages, dynamics, linear and non-linear control, force control methodologies, mechanical design aspects, and robotic programming.

The 4th Edition features a balance of application and theory, introducing the science and engineering of mechanical manipulation--establishing and building on foundational understanding of mechanics, control theory, and computer science. With an emphasis on computational aspects of problems, the text aims to present material in a simple, intuitive way.



Features

- Real-world applications present underlying theories in simple, understandable ways. This practicality helps students learn how to write algorithms to perform required computations.
- End-of-chapter exercises feature “difficulty grades” so instructors can assign to students and easily implement a grade-point plan.
- Programming Assignments at the end of each chapter emphasize concepts from a software perspective.
- A balanced approach presents robotics concepts from mechanical, control theory, and computer science subdisciplines.
- NEW! Additional exercises have been added to the end of each chapter.
- UPDATED! New references, materials, and figures account for changing technology and reflect today's robotics landscape.
- REVISED! More than 100 minor typos have been corrected throughout the text.
- NEW! Two sections have been added, including Section 8.9 on optical encoders and Section 10.9 on adaptive control.

Contents

- | | |
|---|---|
| 1. Introduction | 8. Mechanical Design of Robots |
| 2. Spatial Transformations | 9. Linear Control |
| 3. Forward Kinematics | 10. Non-Linear Control |
| 4. Inverse Kinematics | 11. Force Control |
| 5. Velocities, Static Forces, and Jacobians | 12. Programming Languages and Systems |
| 6. Dynamics | 13. Simulation and Off-Line Programming |
| 7. Trajectory Planning | |

Introduction to Industrial Robotics

Ramachandran Nagarajan

Pages: 320

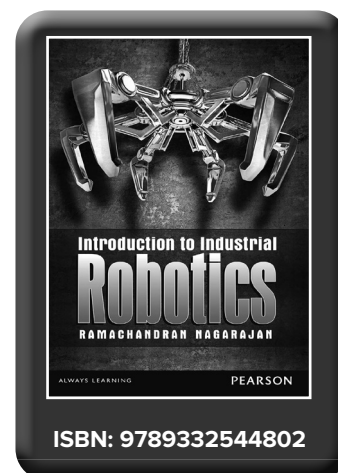
Year: 2016



About the Book

Robotics is the branch of technology that deals with the design, construction, operation, and application of robots. It is a subject offered to the students of mechanical engineering in their final year. This book is written to cover the needs of a budding engineer at the undergraduate level.

This book emphasizes on building the fundamental concepts along with necessary mathematical analysis and graphical representation. Numerical problems are also present for better understanding the topics.



Features

- A detailed listing of chronological development of Robots Technology.
- Composite transformation matrix, Object manipulations and wrist articulations are explained with detailed examples.
- Lucid coverage of grippers and tools with self explanatory figures.
- Detailed coverage of Robot applications in industries.

Contents

- | | |
|--|---|
| 1. Introduction to Robotics | 10. Robot trajectory planning |
| 2. Grippers and tools of Industrial robots | 11. Economic analysis of Robots |
| 3. Coordinate transformation | 12. Artificial Intelligence |
| 4. Kinematics | 13. Robot Dynamics |
| 5. Robot sensors | 14. FLC of Robot Joints |
| 6. Robot control | 15. Medical applications of Robots |
| 7. Robot Programming and work cell | 16. Helping the visually impaired for their autonomous navigation |
| 8. Robot Vision | |
| 9. Robot applications | |

About the Author

Ramachandran Nagarajan was Former Professor in Robotics, School of Engineering, Universiti Malaysia Perlis, Malaysia

Strength of Materials/Mechanics of Solids

Mechanics of Materials, Eleventh Edition in SI Units

R. C. Hibbeler

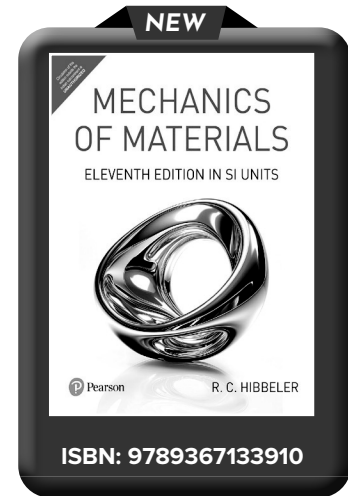
Pages: 888

Year: 2025



About the Book

Russell Hibbeler's *Mechanics of Materials* features a clear and thorough presentation of theory and applications of the principles of mechanics of materials. Now in its eleventh edition, the text continues to empower students with 1. the Procedure for Analysis feature. This provides students with a logical and orderly method for applying theory. Aiming to help students develop their procedures for solving problems, it guides students to master principles and gain confidence. 2. the Important Points feature. This summarizes the most important concepts in a section into points and highlights the ones that are essential to applying theory while solving problems. 3. an emphasis on free-body diagrams. Specific sections and problems are devoted to drawing free-body diagrams, a skill essential to solving equilibrium problems.



Features

- Over 500 new problems have been added which involve applications in aerospace engineering to civil engineering.
- New Fundamental Problems have been added and select problems' solutions in the back of the book have been expanded.
- More photos and photorealistic art throughout the book illustrate how principles apply to real world situations and how materials behave under load.

Contents

- | | | |
|---------------------------------------|--------------------------|------------------------------------|
| 1. Stress | 5. Torsion | 10. Strain Transformation |
| 2. Strain | 6. Bending | 11. Design of Beams and Shafts |
| 3. Mechanical Properties of Materials | 7. Transverse Shear | 12. Deflection of Beams and Shafts |
| 4. Axial Load | 8. Combined Loadings | 13. Buckling of Columns |
| | 9. Stress Transformation | 14. Energy Me |

About the Author

Professor Hibbeler currently teaches both civil and mechanical engineering courses at the University of Louisiana–Lafayette. In the past, he has taught at the University of Illinois at Urbana, Youngstown State University, Illinois Institute of Technology, and Union College.

Mechanics of Materials, 2/e

Egor P. Popov

Pages: 608

Year: 2016



About the Book

This volume stresses fundamental principles of mechanics of materials, and introduces applications from various fields of engineering.

Features

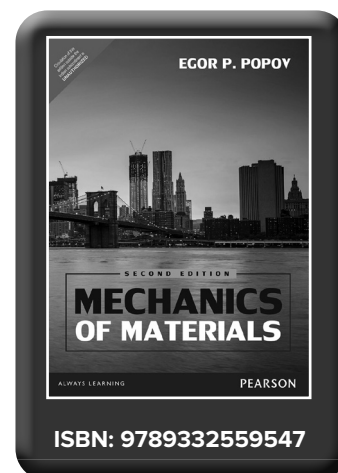
- Includes numerous solved examples.
- Uses English and SI units throughout.

Contents

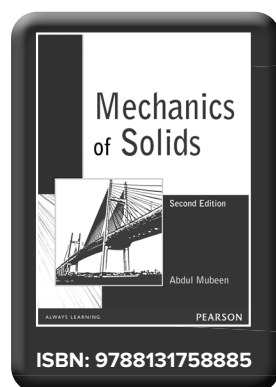
- | | | |
|---|---|--|
| 1. Abbreviations and Symbols | 7. Shearing Stresses in Beams | 12. Design of Members by Strength Criteria |
| 2. Stress—Axial Loads | 8. Compound Stresses | 13. Deflection of Beams |
| 3. Strain—Hooke's Law—Axial Load Structural | 9. Analysis of Plane Stress and Strain | 14. Statically Indeterminate Problems |
| 4. Torsion | 10. Transformation of Moments of Inertia of Areas to Different Axes | 15. Columns. |
| 5. Axial Force—Shear—and Bending Moment | 11. Combined Stresses—Pressure Vessels—Failure Theories | 16. Structural Connections |
| 6. Pure Bending of Beams | | 17. The Energy Methods |
| | | 18. Thick-Walled Cylinders |

About the Author

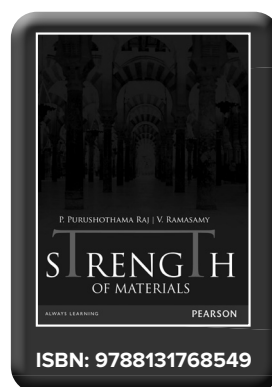
Egor P. Popov, University of California, Berkeley.



➡ ALSO AVAILABLE...



Mechanics of Solids, 2/e
Abdul Mubeen
Pages: 668



Strength of Materials
P. Purushothama Raj / V. Ramasamy
Pages: 488



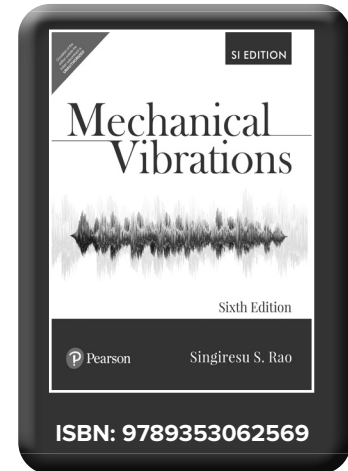
Theory of Vibrations/Mechanical Vibrations

Mechanical Vibrations, 6/e

Singiresu S Rao

Pages: 1152

Year: 2018



About the Book

Retaining the style of previous editions, this sixth SI edition of Mechanical Vibrations effectively presents theory, computational aspects, and applications of vibration in a lucid manner. With an emphasis on computer techniques of analysis, it gives expanded explanations of the fundamentals, focusing on physical significance and interpretation that build upon students' previous experience.

In this edition, several additions and revisions have been made—including new examples, problems, and illustrations—with the goal of making coverage of concepts both more comprehensive and easier to follow.

Features

- Each topic is self-contained, with all concepts explained fully and the derivations presented with complete details.
- Computational aspects are emphasized throughout the book. MATLAB-based examples as well as several general purpose MATLAB programs with illustrative
 - ◆ 34 design-project-type problems
 - ◆ 55 MATLAB programs
 - ◆ 252 illustrative examples
- examples are given in each chapter.
- The description and formulation of vibration problems in several different systems of units is considered to obtain the same response of the physical system. Pedagogy includes:
 - ◆ 988 review questions
 - ◆ 1214 problems

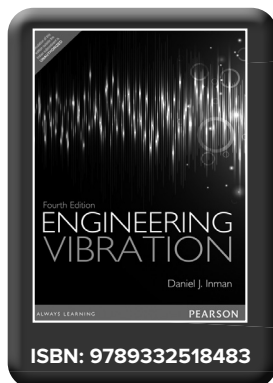
Contents

1. Fundamentals of Vibration
2. Free Vibration of Single-Degree-of-Freedom Systems
3. Harmonically Excited Vibration
4. Vibration Under General Forcing Conditions
5. Two-Degree-of-Freedom Systems
6. Multidegree-of-Freedom Systems
7. Determination of Natural Frequencies and Mode Shapes
8. Continuous Systems
9. Vibration Control
10. Vibration Measurement and Applications
11. Numerical Integration Methods in Vibration Analysis
12. Finite Element Method
13. Nonlinear Vibration
14. Random Vibration

About the Author

Singiresu S Rao University of Miami

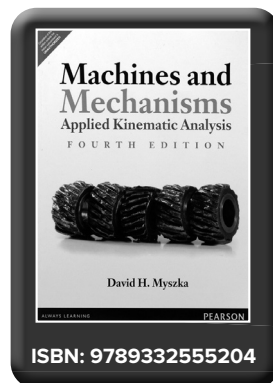
➡ ALSO AVAILABLE...



Engineering Vibrations, 4/e

Daniel J Inman

Pages: 705



Machines & Mechanisms: Applied Kinematic Analysis, 4/e

David H. Myszka

Pages: 384



Thermodynamics

Thermodynamics: An Interactive Approach

Subrata Bhattacharjee

Pages: 724

Year: 2024



About the Book

Thermodynamics: An Interactive Approach employs a layered approach that introduces the important concepts of mass, energy, and entropy early, and progressively refines them throughout the text. To create a rich learning experience for today's thermodynamics student, this book melds traditional content with the web-based resources and learning tools of TEST: The Expert System for Thermodynamics. TEST is an interactive platform that offers smart thermodynamic tables for property evaluation and analysis tools for mass, energy, entropy, and exergy analysis of open and closed systems.

Features

- Throughout this book physical arguments are used to simplify concepts, support mathematical arguments, and explain numerically derived conclusions
- Examples present opportunities to apply analysis, offer detailed solutions, and What-If scenarios
- Did You Know? section offers interesting and helpful facts about materials and engineering concepts
- Problems at the end of each chapter apply concepts and refine engineering analysis
- Property Tables allow for quick reference of material properties, as well as saturation and vapor tables, for many elements and compounds

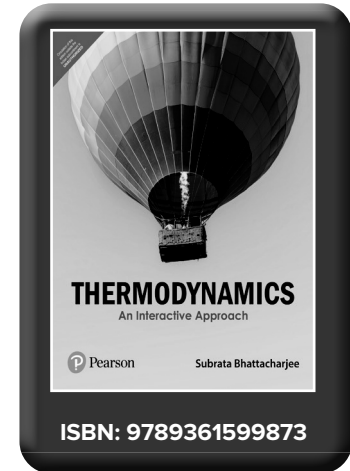
Contents

Introduction Thermodynamic System and its Interactions with the Surroundings

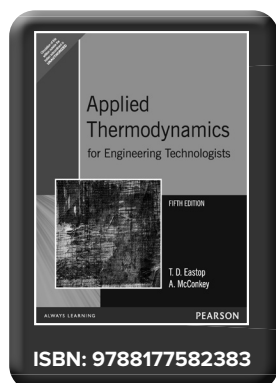
1. Description of a System: States And Properties
2. Development of Balance Equations for Mass, Energy, and Entropy: Application to Closed-Steady Systems
3. Evaluation of Properties: Material Models
4. Mass, Energy, and Entropy Analysis of Open-Steady Systems
5. Mass, Energy, and Entropy Analysis of Unsteady Systems
6. Exergy Balance Equation: Application to Steady and Unsteady Systems
7. Reciprocating Closed Power Cycles
8. Open Gas Power Cycle
9. Open Vapor Power Cycles
10. Refrigeration Cycles
11. Evaluation of Properties: Thermodynamic Relations
12. Psychrometry
13. Combustion
14. Equilibrium
15. Gas Dynamics

About the Author

Subrata Bhattacharjee, San Diego State University



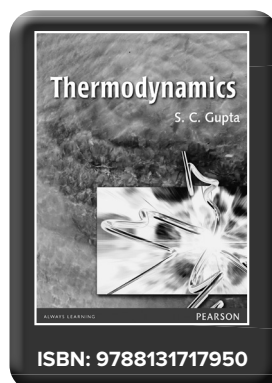
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Applied Thermodynamics for Engineering Technologists, 5/e

T. D. Eastop / A. McConkey

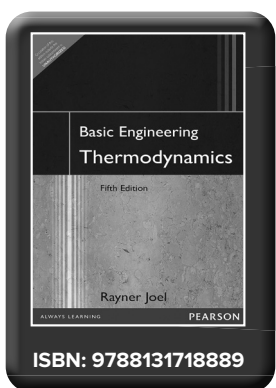
Pages: 736



Thermodynamics

S C Gupta

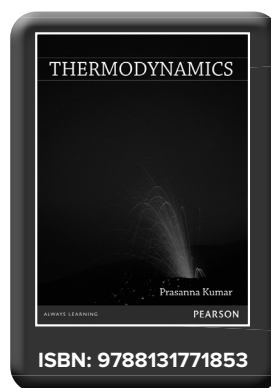
Pages: 552



Basic Engineering Thermodynamics, 5/e

Rayner Joel

Pages: 660



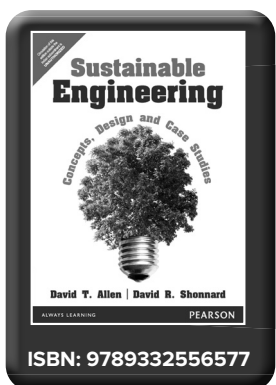
Thermodynamics

Prasanna Kumar

Pages: 616



General Engineering



Sustainable Engineering: Concepts, Design and Case Studies

Allen / Shonnard

Pages: 240

Combustion Engineering

Introduction to Combustion Engineering

Amitava Sarkar, P K Mondal

Pages: 564

Year: 2023



About the Book

Introduction to Combustion Engineering focuses on the gradual transition from understanding of the basics of combustion science to its applications. The laws of thermodynamics and the principle of conservation equations, which are the prerequisites for understanding the basic concepts of combustion are dealt with before discussing the major topics around combustion technologies, flames and fuels. It includes numerous tables featuring practical data and formulas that support the design focus, and chapters that include solved examples and problems.

Features

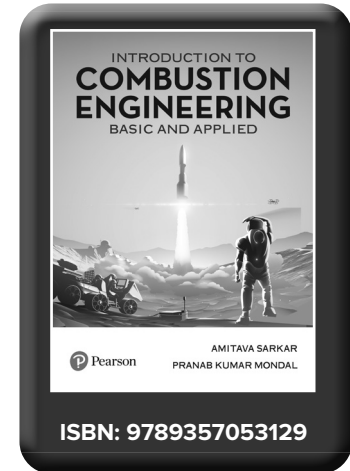
- Detailed coverage of non-premixed and premixed combustion
- Dedicated chapter on Combustion-generated Emissions
- Elementary discussion on Laser diagnostics of combustion processes
- Mathematical methods are presented, along with qualitative descriptions of their use, which are supported by numerous tables with practical data and formulae
- Solutions provided for selected numerical problems

Contents

1. Chapter 1 Application of First Law of Thermodynamics to Combustion
2. Chapter 2 Application of Second Law of Thermodynamics to Combustion
3. Chapter 3 Reaction Kinetics
4. Chapter 4 Mass Transfer
5. Chapter 5 Structure of Hydrocarbons and Their Oxidation
6. Chapter 6 Transport Properties
7. Chapter 7 Conservation Equations
8. Chapter 8 Non-premixed Combustion
9. Chapter 9 Premixed Combustion
10. Chapter 10 Flame Hydrodynamics
11. Chapter 11 Combustion-generated Emissions
12. Chapter 12 Flame Structure

About the author(s)

Amitava Sarkar: Currently visiting faculty at NIT Silchar, Formerly, professor of Mechanical Engineering at Jadavpur University.
Pranab Kumar Mondal: Department of Mechanical Engineering, IIT Guwahati.





Civil Engineering

Basic Civil Engineering

Basic Civil Engineering

Satheesh Gopi

Pages: 348

Year: 2009



About the Book

Basic Civil Engineering is designed to enrich the preliminary conceptual knowledge about civil engineering to the students of non-civil branches of engineering. The coverage includes materials for construction, building construction, basic surveying and other major topics like environmental engineering, geo-technical engineering, transport traffic & urban engineering, irrigation & water supply engineering and CAD.

Features

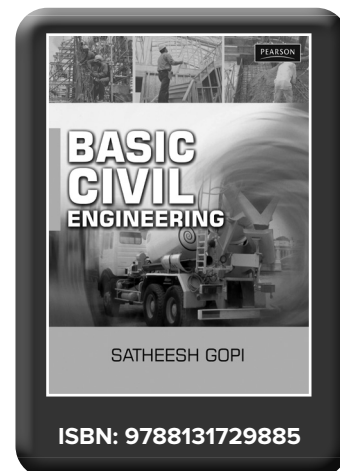
- Quality and standard of Materials along with cost effectiveness.
- Modern field procedures for surveying such as Total Station, GPS and digital levels.
- Building services like air conditioning, fire protection systems, lifts, escalators etc. and also repair and maintenance of structures.
- A chapter on CAD highlighting its importance in civil engineering.

Contents

1. Materials for Construction
2. Building Construction
3. Basic Surveying
4. Other Major Topics in Civil Engineering

About the Author

Satheesh Gopi has over 19 years of experience as a hydrographer and over five years of experience as a civil engineer and is currently the deputy director in the Hydrographic Survey Wing of the Kerala Port Department.



Building Construction

Building Construction Materials and Techniques

P. Purushothama Raj

Pages: 624

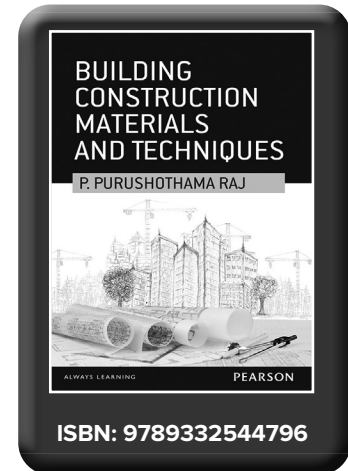
Year: 2016



About the Book

Building construction materials and techniques is a subject offered to the students of civil engineering in their second year. This book is written to cover the subject in universities where it is offered as two different subjects as well as universities where it is offered as a combined single subject at the undergraduate level.

Of the 32 chapters in this book, 19 are dedicated to building construction while the remaining 13 focus on building materials. Each chapter is supplemented with numerous self-explanatory illustrations for easy comprehension.



Features

- Lucid coverage of various building materials.
- Elaborate coverage of concrete and precast concrete units.
- Adequate detailing on masonry construction.
- Highly illustrated with line diagrams, cash-flow diagrams, bar diagrams, line graphs to make the book interactive and easy to understand.

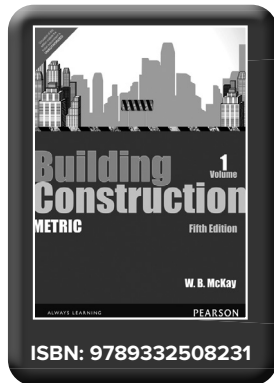
Contents

- | | | |
|----------------------------------|-------------------------------------|--|
| 1. Construction materials | 12. Building finishes | 23. Floorings |
| 2. Building Stones | 13. Other building materials | 24. Structural steel works |
| 3. Bricks | 14. Planning of buildings | 25. Roofs and roof coverings |
| 4. Tiles and ceramic materials | 15. Foundations | 26. Plastering and pointing |
| 5. Lime | 16. Masonry construction | 27. Essential services in buildings |
| 6. Cement | 17. Walls | 28. Special services in buildings |
| 7. Mortar | 18. Framed structures | 29. Protection of buildings |
| 8. Concrete | 19. Arches and Lintels | 30. Maintenance of buildings |
| 9. Precast concrete units | 20. Doors, Windows and ventilators | 31. Construction planning and scheduling |
| 10. Wood and wood-based products | 21. Stairs and elevators | 32. Construction equipments |
| 11. Metals and alloys | 22. Temporary supporting structures | |

About the Author

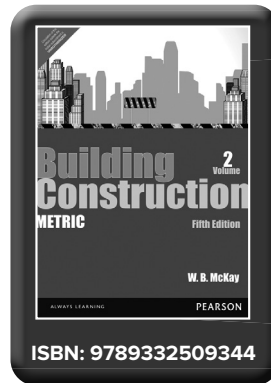
P. Purushothama Raj was Former Director, Adhiparasakthi Engineering College. He has over 30 years of teaching experience and has published journals in several national and international journals.

➡ EXCLUSIVE TO MEHUL BOOKS



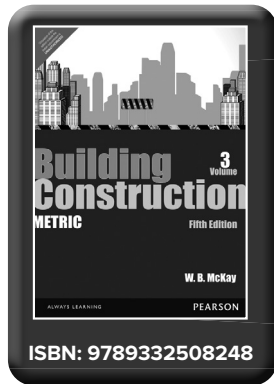
**Building Construction,
Metric Volume-1, 5/e**
W. B. McKay
Pages: 178

ISBN: 9789332508231



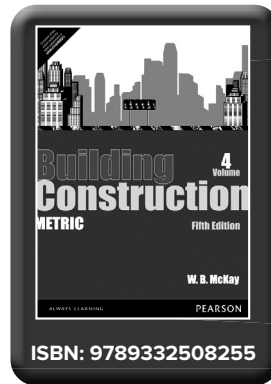
**Building Construction,
Metric Volume-2, 4/e**
W. B. McKay
Pages: 152

ISBN: 9789332509344



**Building Construction,
Metric Volume-3, 5/e**
W. B. McKay
Pages: 172

ISBN: 9789332508248



**Building Construction,
Metric Volume-4, 4/e**
W. B. McKay
Pages: 283

ISBN: 9789332508255

Construction Safety Management

Construction Quality Management and Control

Kumar Neeraj Jha, Amarjit Singh, Sreedevi A. R.

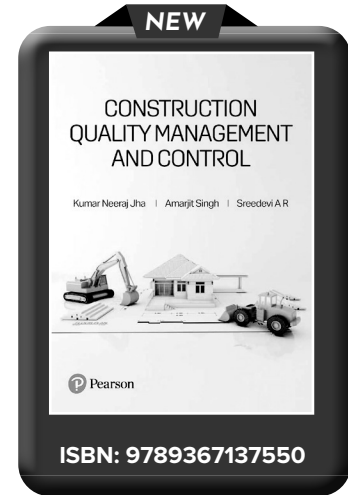
Pages: 340

Year: 2025



About the Book

Quality in constructed projects is crucial for ensuring safety, longevity, and functionality. High-quality construction ensures that buildings, roads, infrastructure, and mega construction projects can withstand wear, weather, and use over time, minimizing the risk of costly repairs or failures. High quality also enhances the comfort, safety, and health of occupants, reducing the potential for accidents, rework, or other structural, mechanical, and electrical issues. Moreover, quality workmanship reflects professionalism and helps to meet legal and regulatory standards, avoiding legal and financial consequences, some of which can be severe. Quality construction also promotes sustainability and brings higher profits for the contractor while satisfying project owners, thereby assuring success. This book is designed to help construction professionals advance the cause of quality in the built environment, as well as serve as a textbook for students learning quality control in construction.



Features

- This book delves into the principles and practices of quality management, addressing critical topics such as quality planning, assurance, control processes, and continuous improvement strategies.
- The book focuses on modern tools and technologies covering topics such as reliability, availability, operating characteristic curves, process capability, Six Sigma, and data-driven decision-making, effectively bridging the gap between traditional practices and emerging innovations.
- It also provides practical insights into implementing quality control measures, conducting inspections and managing risks that can compromise project integrity.

Contents

1. Introduction
2. Quality Management Scientists and their Teachings
3. Total Quality Management
4. ISO Standards and Quality Assessment Systems
5. Cost of Quality
6. Planning for Project Quality
7. Quality Audit
8. Inspection and Quality Control
9. Acceptance Sampling and Six Sigma Applications
10. Quality Control Tools
11. Reliability and Availability
12. Statistical Evaluation of Concrete Strength

About the AUTHOR(S)

Kumar Neeraj Jha, PhD is a Professor of Civil Engineering at the Indian Institute of Technology Delhi. He started his career with Larsen and Toubro Ltd. and was instrumental in the successful completion of a number of construction projects. He has published more than 160 papers in international and national journals and conference proceedings. He has supervised 24 PhD Students and more than 120 MTech students. He was included in the list of the World's Top two per cent Scientists in 2024, published by Elsevier and Stanford University. His books on 'Construction Project Management: Theory and Practice' and 'Formwork and Scaffold Engineering' published by Pearson Education and 'Determinants of Construction Project Success in India' are widely accepted as textbooks and reference books in different universities. He has also co-authored books on 'Construction Safety Management' published by Pearson Education and 'Construction Company Management'. He teaches courses in construction engineering and management. He has conducted numerous training programs both off line and online. His online program on project management has trained more than 2,000 professionals. He has been involved in a number of consultancy and R&D projects. His research interests focus on project and organisation success factors, formwork, project risks, and construction quality and safety.

Amarjit Singh, PhD, PEng, CEng, FICE, FASCE, FIE is a Professor of Civil, Environmental and Construction Engineering at the University of Hawaii at Manoa. He graduated from IIT Delhi with a BTech degree, worked in the construction industry for 10 years in responsible positions in India, Nepal, and Kuwait, and then earned an MEng degree from Texas A&M University, College Station, TX, USA, followed by a PhD from Purdue University, West Lafayette, IN, USA. He worked another year as a consultant in the construction industry in Canada before joining academia. He received ASCE's 2024 Richard R. Torrens Award; the 2019 ASCE Construction Management Award; the 2012 College of Engineering Service Award; and the 2009 University of Hawaii Board of Regents Medal for Excellence in Teaching; and 10 best paper awards. He was on sabbatical as a Visiting Professor at IIT Delhi and as a Visiting Associate Professor at the University of New South Wales, Sydney, Australia, as well as at Cornell University, Ithaca, NY, USA. He was also a visiting scholar at Reading University, England, and City University of Hong Kong. He serves as the founding President and Chairman of the International Structural Engineering and Construction Society and as the Founding Editor-in-Chief of the ASCE Journal of Legal Affairs and Dispute Resolution in Engineering and Construction. Dr Singh was Chairperson of the Hawaii Council of Engineering Societies, Director at the University of Hawaii Professional Assembly, and Co-Chair of the University of Hawaii's All Campus Council of Faculty Senate Chairs. He wrote a textbook titled 'Quantitative Risk Management and Decision Making in Construction', and co-wrote books titled 'Area Cost Factors Method Methodology in Construction Cost Estimating' and 'Construction Safety Management'. He teaches quality control and applied probability and statistics, among other subjects in engineering management. He is a fellow of the Institution of Civil Engineers (UK), the American Society of Civil Engineers, and the Institution of Engineers (India).

Sreedevi A. R. MTech has been an Assistant Professor in the Department of Civil Engineering at the College of Engineering Trivandrum, since 2019. She holds a BTech in Civil Engineering from Government Engineering College, Thrissur; and an MTech in Construction Technology and Management from the National Institute of Technology Karnataka, Surathkal, for which she was awarded the Gold Medal. She is currently pursuing her PhD degree at the Indian Institute of Technology Delhi. She has over eight years of professional experience in the construction sector,

Construction Safety Management

Kumar Neeraj Jha, Dilip A. Patel, Amarjit Singh

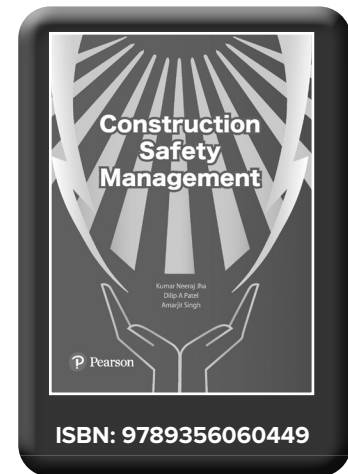
Pages: 448

Year: 2022



About the Book

The subject of construction safety is so vast that it takes everything from an enlightened management approach to good supervisors, trained workers, good technology, and a sincere dedication to safety. Indeed, there is no other way to roll back the 22,000 deaths and 74 lakh injuries a year on Indian construction projects that cost the country ₹117,000 crores a year, which is too many lives and too much money to throw away. Thus, a new safety culture is necessary that gives paramount importance to safety. This book on Construction safety management is designed to help construction safety professionals, as well as serve as a textbook for students learning construction safety management.



Features

- Delves into essential topics such as measuring and reporting accidents, and their investigation and causes.
- Elaborates on identifying hazards, evaluating risks, implementing effective safety policies, and creating appropriate budgets.
- Discusses safety acts and regulations, and the responsibilities of stakeholders in ensuring zero accidents.

Contents

- | | |
|---|--|
| Preface | 9. Safety Budget and Incentives |
| Acknowledgments | 10. Measurement of Safety Performance |
| About the Authors | 11. Safety Audit System |
| 1. Construction Overview and Safety Status | 12. Accident Investigation and Analysis Methods |
| 2. Fatalities and Injuries in the Construction Industry | 13. Accident Prevention Programmes |
| 3. Accident Costs | 14. Safety Acts and Regulations |
| 4. Accident Causation Theories | 15. Responsibilities of Stakeholders |
| 5. Safety Principles, Climate, and Behaviour | 16. Safety in Demolition Operations and Traffic Work Zones |
| 6. Hazard Identification and Risk Assessment | Index |
| 7. Evaluating Risks of a Construction Activity | |
| 8. Policies for an Effective Safety and Health Management Programme | |

About the AUTHOR(S)

Kumar Neeraj Jha, Professor, Department of Civil Engineering, Indian Institute of Technology Delhi, India

Dilip A. Patel, Associate Professor, Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, India

Amarjit Singh, Professor, Department of Civil and Environmental Engineering, University of Hawai'i at Manoa, USA

Construction Technology

Principles and Practices of Commercial Construction, 10/e

Cameron K. Andres, Ronald C. Smith, W. Ronald Woods

Pages: 564

Year: 2022



About the Book

Principles and Practices of Commercial Construction provides a practical, well-rounded approach to modern construction principles and practices and teaches students how to apply design theory to the construction process. Its flexible organization gives instructors the option of teaching each chapter on a standalone basis in a range of construction, architecture, and engineering courses.

The 10th edition expands its discussion of practical applications in structural design projects and adds practice opportunities preparing students for licensing exams.

Features

- The text contextualizes each phase of the construction process through well-organized coverage of tasks ranging from site evaluation and layout, to interior design and building finishes.
- Basic structural framing materials such as wood, steel, and concrete are discussed in detail to emphasize their requirements, strengths, and limitations.
- Illustrations have been updated throughout the text to reflect changes in construction equipment and to illuminate current construction practices.
- Hundreds of chapter ending review questions reinforce concepts and provide extensive practice.
- Several chapters now incorporate new accepted practices or building code influences, with a continued emphasis on sustainable ("green") building.

Contents

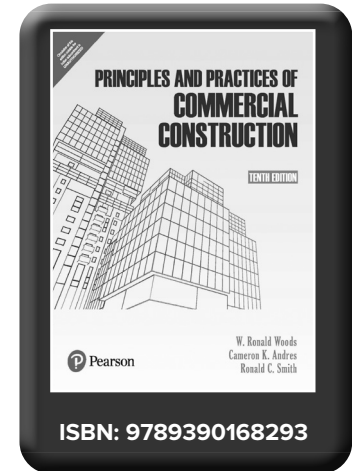
- | | |
|--|---|
| 1. The Practice of Commercial Construction | 9. Structural Timber Frame |
| 2. Site Evaluation and Layout | 10. Structural Steel Frame |
| 3. Site Development and Services | 11. Floor Systems and Industrial Flooring |
| 4. Excavations and Excavating Equipment | 12. Roof Systems and Industrial Roofing |
| 5. Foundations | 13. Masonry Construction |
| 6. Formwork | 14. Curtain Wall Construction |
| 7. Concrete Work | 15. Building Insulation |
| 8. Reinforced Concrete Frame | 16. Finishing |

About the Author(S)

Cameron K. Andres graduated from the University of Manitoba (1966) with a B Sc in Civil Engineering and then worked as a structural design engineer in Western Canada for nine years (1966 to 1975).

Ronald C. Smith

W. Ronald Woods, University of North Florida.



Civil Drafting Technology, 8/e

David P Madsen, Terence M Shumaker

Pages: 528

Year: 2020



About the Book

This text provides complete coverage of the design and drafting principles and practice used in the civil drafting field, and a working knowledge of the basic topics of mapping in a workbook format. Created with input from civil engineering industry professionals and educators and content-tested in the classroom, Civil Drafting Technology is a unique, comprehensive guide to civil drafting in a clear workbook approach. Designed with the goal of providing a foundation of work done by civil engineering companies and a broad education in the civil drafting field, the book acquaints students with the civil drafting discipline, mapping, computer-aided design and drafting (CADD), surveying, locations, distances, angles, directions, contour lines, site plans, horizontal alignments, profiles, earthwork, detail drawings, and geographic information system (GIS).

Features

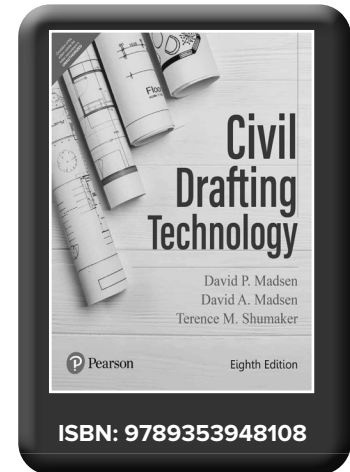
- A unique, broad, highly useful range of content not found in other texts.
- Motivating, easy-to-read and understand, and supported with quality illustrations.
- Presents CADD content and applications throughout.
- Reinforces learning using examples and by reviewing and applying chapter content.

Contents

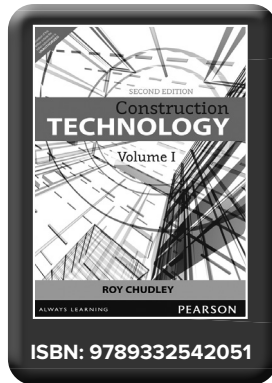
- | | |
|--|---|
| 1. Introduction to Civil Drafting Technology | 8. Contour Lines |
| 2. Computer-Aided Design and Drafting (CADD) | 9. Site Plans |
| 3. Map Scales | 10. Horizontal Alignments |
| 4. Map Symbols | 11. Profiles |
| 5. Introduction to Surveying | 12. Earthwork |
| 6. Locations and Distances | 13. Detail Drawings |
| 7. Angles and Directions | 14. Introduction to Geographic Information System (GIS) |

About the Author

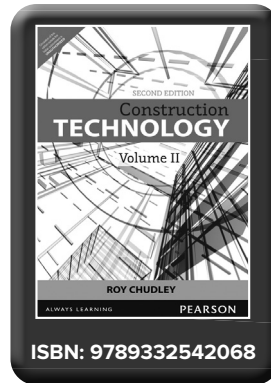
David P. Madsen is the president of Engineering Drafting & Design, Inc. and the vice president of Madsen Designs Inc. (www.madsendesigns.com). He provides drafting and design consultation and training for all disciplines, he has been a professional design drafter since 1996, and he has extensive experience in a variety of drafting, design, and engineering disciplines.



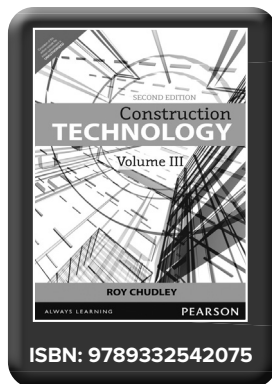
CONSTRUCTION TECHNOLOGY EXCLUSIVE TO MEHUL BOOK



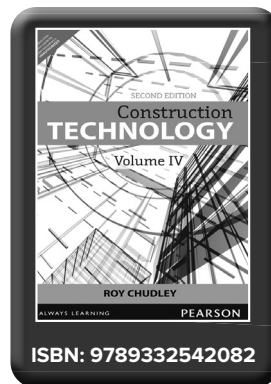
**Construction
Technology -
Volume-1, 2/e**
Roy Chudley
Pages: 264



**Construction
Technology -
Volume-2, 2/e**
Roy Chudley
Pages: 248



**Construction
Technology -
Volume-3, 2/e**
Roy Chudley
Pages: 256



**Construction
Technology -
Volume-4, 2/e**
Roy Chudley
Pages: 302

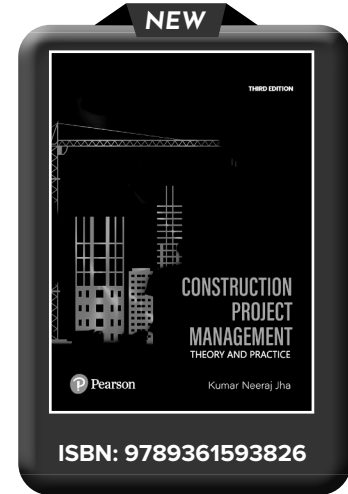
Construction Project Management

Construction Project Management - Theory and Practice, 3/e

Kumar Neeraj Jha

Pages: 924

Year: 2025



About the Book

The third edition of Construction Project Management continues to discuss the various facets of construction project management with emphasis on the fundamental concepts and putting it to use in real-life scenario with the help of case studies from the field. There is gradual build-up of concepts and their applications to help students and field engineers get a complete understanding right from the conception stage to the completion of the projects.

Features

- Dedicated chapters on Construction Material Management, Construction Equipment Management and Construction Contracts to provide readers with a comprehensive understanding
- The latest and emerging concerns of Construction Safety and Construction Quality are discussed in detail
- Step by step illustration of MS Project 2019 and Primavera P6
- Ample examples throughout the book to facilitate a better understanding of the concepts discussed
- Enriched with numerous charts, tables, and diagrams to help comprehend and retain the information presented

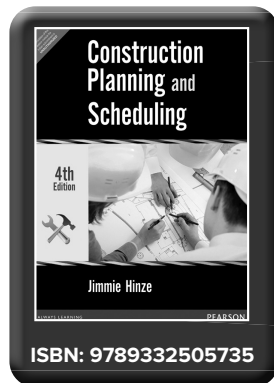
Contents

1. Introduction
2. Project Organization
3. Construction Economics
4. Client's Estimation of Project Cost
5. Construction Contract
6. Construction Planning
7. Project Scheduling and Resource Levelling
8. Contractor's Estimation of Cost and Bidding Strategy
9. Construction Equipment Management
10. Construction Accounts Management
11. Construction Material Management
12. Project Cost and Value Management
13. Construction Quality Management
14. Risk and Insurance in Construction
15. Construction Safety Management
16. Project Monitoring and Control System
17. Construction Claims, Disputes, and Project Closure
18. Computer Applications in Scheduling, Resource Levelling, Monitoring, and Reporting
19. Factors Behind the Success of a Construction Project
20. Linear Programming in Construction Management
21. Transportation, Transshipment, and Assignment Problems

About the Author

Kumar Neeraj Jha, PhD is a Professor of Civil Engineering at the Indian Institute of Technology Delhi. He started his career with Larsen and Toubro Ltd. and was instrumental in the successful completion of a number of construction projects. He has published more than 160 papers in international and national journals and conference proceedings. He has supervised 24 PhD Students and more than 120 MTech students. He was included in the list of the World's Top two per cent Scientists in 2024, published by Elsevier and Stanford University. His books on 'Construction Project Management: Theory and Practice' and 'Formwork and Scaffold Engineering' published by Pearson Education and 'Determinants of Construction Project Success in India' are widely accepted as textbooks and reference books in different universities. He has also co-authored books on 'Construction Safety Management' published by Pearson Education and 'Construction Company Management'. He teaches courses in construction engineering and management. He has conducted numerous training programs both offline and online. His online program on project management has trained more than 2,000 professionals. He has been involved in a number of consultancy and R&D projects. His research interests focus on project and organisation success factors, formwork, project risks, and construction quality and safety.

➡ ALSO AVAILABLE...



**Construction Planning
and Scheduling, 4/e**

Jimmie Hinze

Pages: 264



Concrete Technology

Formwork and Scaffold Engineering, 2/e

Kumar Neeraj Jha

Pages: 616

Year: 2023



About the Book

Formwork and Scaffold Engineering, 2e: A Comprehensive Guide across 18 chapters, starting with formwork essentials, materials, and design basics. Dives into specialized techniques for foundations, walls, columns, slabs, beams, special, structures, and bridge. Flying formwork and slipform methods are also covered in depth. Chapters 12 and 13 delve into formwork supports and scaffolds. Chapter 14 intricately examines precast concrete formwork. Uncovers formwork management intricacies of pre- and post-award with case studies in Chapters 15 and 16. Chapters 17 and 18 dissect formwork failure and multi-story construction challenges. Concluding the journey is a glossary of vital formwork terms, providing an essential resource for navigating the intricacies of formwork.

Features

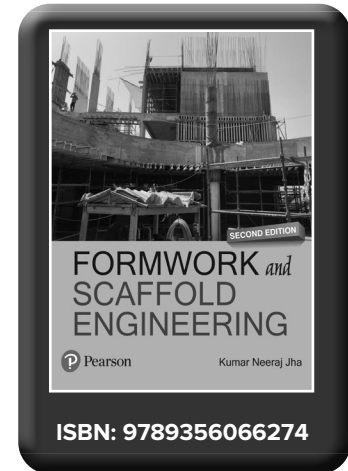
- Simplified explanation of formwork theory and practices, enriched with schematic diagrams and real-life photographs.
- Real project examples elucidated in easily understandable language.
- Adherence to SI units of measurement for clarity.
- Abundant solved examples for solidifying conceptual understanding.
- Comprehensive description of formwork products/systems by leading manufacturers.
- Inclusion of references to Indian Standards, major Standard Code of Practices, and research literature for practical use by practitioners and researchers.
- Chapter-wise review questions, both objective and subjective, for assessing comprehension of learned concepts.

Contents

- | | |
|------------------------------------|--|
| 1. Introduction | 10. Flying Formwork |
| 2. Formwork Materials | 11. Slipform |
| 3. Formwork Design Concepts | 12. Formwork Supports |
| 4. Formwork for Foundations | 13. Scaffold |
| 5. Wall Formwork | 14. Formwork for Precast Concrete |
| 6. Column Formwork | 15. Pre-Award Formwork Management Issues |
| 7. Slab and Beam Formwork | 16. Post-Award Formwork Management Issues |
| 8. Formwork for Special Structures | 17. Formwork Failure |
| 9. Formwork for Bridge Structures | 18. Formwork Issues in Multi-Story Building Construction |

About the Author

Kumar Neeraj Jha, Professor, Department of Civil Engineering, Indian Institute of Technology Delhi, New Delhi

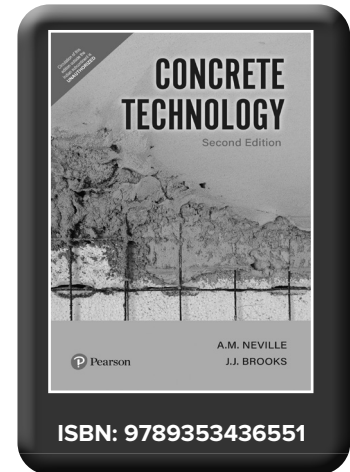


Concrete Technology, 2/e

A. M. Neville, J.J. Brooks

Pages: 466

Year: 2019



About the Book

The classic textbook and reference guide to concrete is updated to include the latest standards and developments. This book gives students a thorough understanding of all aspects of concrete technology from first principles. An excellent coursebook for all students of Civil Engineering, Structural Engineering and Building at degree or diploma level, Concrete Technology will also be a valuable reference book for practising engineers in the field.

Features

- New sections on: fillers in the cementitious material waterproofing and anti-bacterial admixtures recycled concrete aggregate self-consolidating concrete
- It covers concrete ingredients, properties and behaviour in the finished structure with reference to national standards and recognised testing methods.
- Examples and problems are given throughout to emphasise the important aspects of each chapter.

Contents

- | | |
|---|---|
| 1. Concrete As A Structural Material. | 12. Elasticity And Creep. |
| 2. Cement. | 13. Deformation And Cracking Independent Of Load. |
| 3. Normal Aggregate. | 14. Permeability And Durability. |
| 4. Quality Of Water. | 15. Resistance To Freezing And Thawing. |
| 5. Fresh Concrete. | 16. Testing. |
| 6. Strength Of Concrete. | 17. Compliance With Specifications. |
| 7. Mixing, Handling, Placing And Compacting Concrete. | 18. Lightweight Concrete. |
| 8. Admixtures. | 19. Mix Design. |
| 9. Temperature Problems In Concreting. | 20. Special Concretes. |
| 10. Development Of Strength. | |
| 11. Other Strength Properties. | |

About the Author(s)

A. M. Neville, Senior Lecturer in Civil Engineering Materials, University of Leeds

J.J. Brooks, Civil Engineering Consultant, Vice-President of the Royal Academy of Engineering, formerly Principal of the University of Dundee

Prestressed Concrete Design

Praveen Nagarajan

Pages: 350

Year: 2013



About the Book

This book is suited for a first course in *prestressed concrete design* offered to senior undergraduate students in civil engineering and postgraduate students in structural engineering. The book focuses on the behaviour of the prestressed concrete structural elements, with emphasis on clarity and precision in its discussions. Carefully chosen worked examples are included to delineate the design aspects while pointed chapter-end questions enable effortless recapitulation of the subject. This book, while being useful to both the students and teachers, will also serve as an invaluable reference for practising engineers.

Features

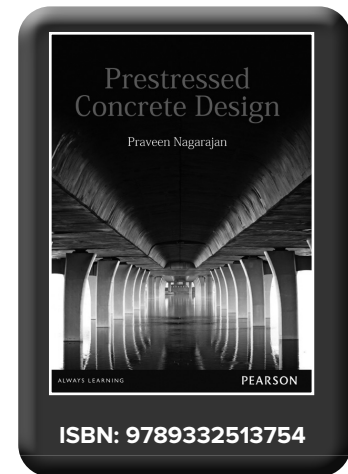
- The code provisions in IS: 1343 are critically analyzed and articulated.
- Design methods for torsion and the strut-and-tie method for bursting forces in anchorage zones are elucidated.
- Design of special structures such as pipes, water tanks and composite beams are unravelled.
- A step-by-step approach of problem-solving is adopted.

Contents

1. Basic Concepts
2. Materials
3. Limit State Design
4. Losses in Prestress
5. Analysis of Sections
6. Shear and Torsion
7. Anchorage Zones
8. Deflections
9. Design of Members
10. Composite Materials
11. Intermediate Structures
12. Slabs

About the Author

Prof Praveen Nagarajan, is Assistant Professor, Department of civil engineering at National Institute of Technology, Calicut. He has published his papers in several national and international journals. He has over 10 years of teaching experience.



Properties of Concrete, 5/e

A. M. Neville

Pages: 872

Year: 2012

About the Book

Since its first publication in 1963, *Properties of Concrete* has been internationally acclaimed as the definitive work of reference on the subject for both the professional and the student engineer. The book has been translated into 12 languages and has sold well over half a million copies.

Features

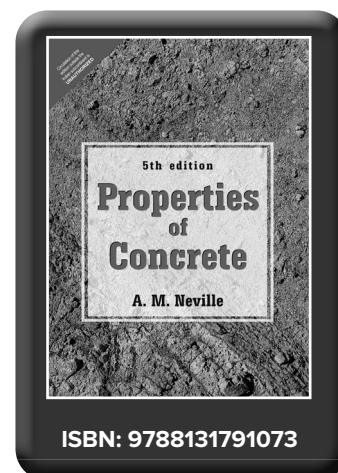
- New material includes such topics as self-compacting (self-consolidating) concrete, recycled concrete aggregate, thaumasite sulfate attack, compactability test, and delayed ettringite formation.
- Standards, both American (ASTM) and British/European updated to 2010 are used.
- Both SI and American (Imperial) units are used throughout.
- Includes 1500 full references to the world's literature on concrete and its constituents.
- An extensive subject index containing over 6000 entries provides excellent ease of reference.

Contents

1. Portland Cement
2. Cementitious materials of different types
3. Properties of aggregate
4. Fresh concrete
5. Admixtures
6. Strength of concrete
7. Further aspects of hardened concrete
8. Temperature effects in concrete
9. Elasticity, shrinkage, and creep
10. Durability of concrete
11. Effects of freezing and thawing and of chlorides
12. Testing of hardened concrete
13. Concretes with particular properties
14. Selection of concrete mix proportions (mix design)

About the Author

Adam Neville is a renowned international authority on concrete and author or co-author of nine other books, the latest of which are *Neville on Concrete* and *Concrete: Neville's Insights and Issues*, as well as over 250 research and technical papers.



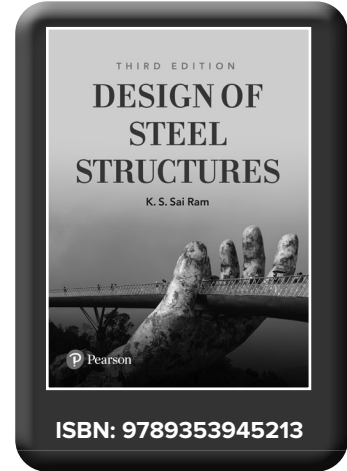
Design of Steel Structures

Design of Steel Structures, 3/e

K. S. Sai Ram

Pages: 624

Year: 2020



About the Book

This book on the design of steel structures uses the limit state method and follows the latest BIS code. With a perfect mix of theory and relevant applications, Design of Steel Structures discusses the most recent design methodologies in the subject, thus making it an excellent offering for students and practising engineers.

Features

The text has been updated as per latest IS codes. A single chapter on connections is presented with the inclusion of End plate connection, Fin plate connection and Extended end plate connections which became popular in recent years. Inclusion of multi-storey steel buildings with two new examples, on multi-storey steel buildings and Industrial steel building. Coverage of Truss girder bridges.

Contents

Preface

About the Author

1. Introduction
2. Structural Steel Fasteners
3. Tension Members
4. Compression Members
5. Beams
6. Gantry Girder
7. Welded Plate Girder
8. Beam-Columns

9. Column Splices and Bases

10. Connections

11. Light Gauge Steel Sections

12. Composite Construction

13. Steel Buildings

14. Steel Bridges

Appendices

References

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About the Author

Dr K. S. Sai Ram was graduated in Civil Engineering from the College of Engineering, Andhra University, Visakhapatnam, in the year 1983. After working for a few months with Unitech Consultants Pvt. Ltd., he joined IIT Bombay and obtained his M.Tech. degree in Aerospace Structures. In 1986, he joined as a lecturer in the Department of Civil Engineering, R. V. R. & J. C. College of Engineering, Guntur, where he is currently working as a Professor. He obtained his Ph.D. in the year 1992 from IIT Kharagpur in the field of Fibre Reinforced Plastic Composite Materials. Dr Sai Ram has published twenty research papers in international/national journals and presented fifteen research papers in international/national conferences. He has guided three candidates towards their Ph.D. degrees and has also supervised twenty one M.Tech. dissertations. He has been teaching the design of steel structures for the last 30 years to undergraduate and postgraduate students of Civil Engineering.

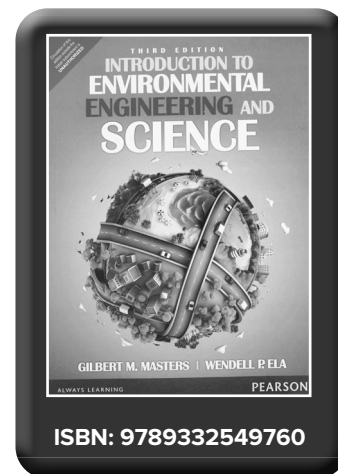
Environmental Engineering

Introduction to Environmental Engineering and Science, 3/e

Gilbert M. Masters, Wendell P. Ela

Pages: 720

Year: 2015



About the Book

Balanced coverage of all the major categories of environmental pollution, with coverage of current topics such as climate change and ozone depletion, risk assessment, indoor air quality, source-reduction and recycling, and groundwater contamination.

Features

- Risk Assessment (Chapter 4) - separated from hazardous substance legislation and is complete chapter in itself.
- Explores urgent environmental issues that have become the focus of much of the environmental attention in recent years.
 - ◆ Global Climate Change
 - ◆ Risk Assessment
 - ◆ Stratospheric Ozone Depletion
 - ◆ Greenhouse effect
 - ◆ Indoor air quality
 - ◆ Groundwater contamination
 - ◆ Acid Deposition
 - ◆ Hazardous Waste
- Numerous examples of each quantitative concept - Worked examples in each quantitative section.
- Numerous problems at the end of each chapter.
- Chapter covering Solid Waste Management and Resource Recovery - This chapter focuses on pollution prevention and product stewardship.
- Expanded coverage of water resources and Groundwater remediation - including challenges posed by subsurface contamination of nonaqueous-phase liquids.
- Covers the treatment of hazardous wastes and descriptions of the key pieces of environmental legislation that regulate hazardous substances.

Contents

1. Mass and Energy Transfer
2. Environmental Chemistry
3. Mathematics for Growth
4. Risk Assessment
5. Water Pollution
6. Water Quality Control
7. Air Pollution
8. Global Atmospheric Change
9. Solid Waste Management and Resource Recovery

About the Authors

Gilbert M. Masters, Stanford University

Wendell P. Ela, University of Arizona

Basic Environmental Technology, 6/e

Jerry A Nathanson, Richard A Schneider

Pages: 456

Year: 2016



About the Book

For introductory civil/construction technology program courses in environmental technology, water supply and pollution control, environmental quality control, environmental and sanitary design, and water/wastewater technology.

The clear, up-to-date, practical, visual, application-focused introduction to modern environmental technology.

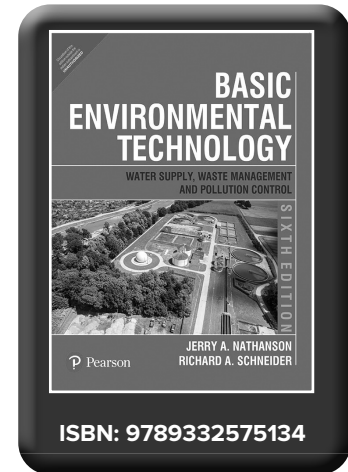
Now fully updated, *Basic Environmental Technology, Sixth Edition* emphasizes applications while presenting fundamental concepts in clear, simple language. It covers a broad range of environmental topics clearly and thoroughly, giving students a solid foundation for further study and workplace success. This edition adds new coverage of environmental sustainability, integrated water management, low impact development, green building design, advanced water purification, dual water systems, new pipeline materials, hydraulic fracturing, constructed wetlands, single stream municipal solid waste recycling, plasma gasification of waste, updated EPA standards, and more. Hundreds of clear diagrams and photographs illuminate key concepts; practice problems and review questions offer students ample opportunity to deepen their mastery. Math is applied at a basic level, and all computations are fully explained with example problems; both U.S. and metric units are used. Students with less academic experience will also appreciate this text's review of basic math, and its basic primers on biology, chemistry, geology, hydrology, and hydraulics.

Features

- **Fully addresses all facets of environmental technology related to water supply, waste management, and pollution control**—preparing students to enter any organization involved with environmental technology.
- **Teaches through real-world applications**—linking concepts to real-world issues that will be relevant to students.
- **NEW! Discusses environmental sustainability, integrated water management, low impact development, and green building design throughout the book**—ensuring that students understand the field's most significant trends and opportunities.
- **NEW! Covers many significant new topics and trends, including dual water systems, new pipeline materials, environmental impacts of hydraulic fracturing (fracking), constructed wetlands, single stream municipal solid waste recycling, and plasma gasification of solid and hazardous waste**—preparing students to participate in cutting-edge projects for many years to come.
- **NEW! Contains expanded discussions of environmental education, certification, and employment**—giving students up-to-date information and guidance for finding jobs in the field.
- **NEW! Introduces LEED green building project certification**—showing students how to earn the green building industry's most valuable credentials.

Contents

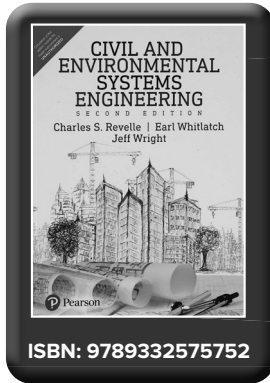
1. Basic Concepts
 2. Hydraulics
 3. Hydrology
 4. Water Quality
 5. Water Pollution
 6. Drinking Water Purification
 7. Water Distribution Systems
 8. Sanitary Sewer Systems
 9. Stormwater Management
 10. Wastewater Treatment and Disposal
 11. Municipal Solid Waste
 12. Hazardous Waste Management
 13. Air Pollution and Control
 14. Noise Pollution and Control
- Appendix A. Environmental Impact Studies and Audits
Appendix B. Education, Employment, Licensing, and Certification
Appendix C. LEED Green Building Project Certification Process
Appendix D. Review of Basic Mathematics, Units, and Unit Conversions
Appendix E. Glossary and Abbreviations
Appendix F. Answers to Practice Problems
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About the author(s)

Jerry A. Nathanson M.S.,P.E., Professor Emeritus, Union County College, Cranford, NJ
Richard A. Schneider M.S.,P.E., Madison Area Technical College

➡ ALSO AVAILABLE...



Civil and Environmental Systems Engineering, 2/e

Charles S. Revelle

Pages: 520

Facilities Planning

Facility Layout and Location: An Analytical Approach, 2/e

Richard L. Francis, Lenn F. McGinnis Jr., John A. White



Pages: 608

Year: 2015

About the Book

A comprehensive introduction to quantitative methods for facility layout and location.

Features

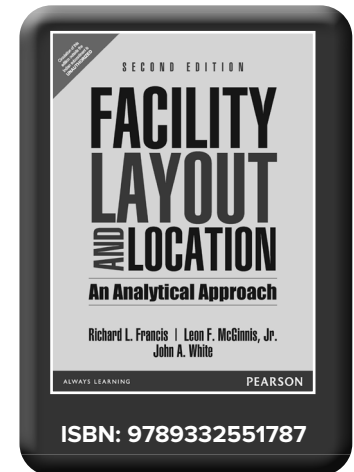
- Treats problems of facility layout and location together and views them as a “layout problem in the large.”
- Introduces the field’s issues and literature, along with basic tools and methodologies.
- Contains basic design and layout approaches and problem definitions.
- Contains extensive figures and tables, and numerical examples.

Contents

1. Introduction
2. The Plant Layout Problem
3. Computerized Layout Planning
4. Planar Single Facility Location Problems
5. Storage Systems Layout
6. Planar Multifacility Location Problems
7. Network Location Problems
8. Cyclic Network Location Problems
9. Advanced Discrete Location Models

About the author(s)

Richard L. Francis, University of Florida
John A. White, Georgia Institute of Technology



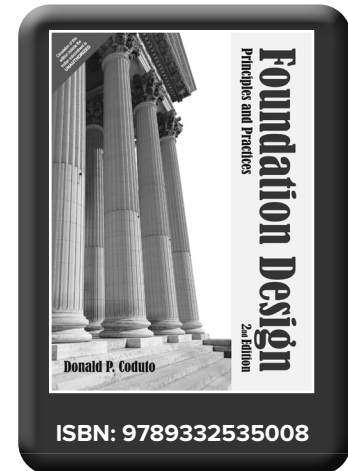
Geotechnical Engineering/Geology

Foundation Design: Principles and Practices, 2/e

Donald P. Coduto

Pages: 888

Year: 2014



About the Book

Covers the subject matter thoroughly and systematically, while being easy to read. Emphasizes a thorough understanding of concepts and terms before proceeding with analysis and design, and carefully integrates the principles of foundation engineering with their application to practical design problems.

Features

- NEW - Expanded coverage of earth retaining structures—Features separate full chapters on cantilever walls and sheet pile walls.
- New A chapter on reliability-based design, reorganized chapters on deep foundations.
- NEW - Revised coverage of laterally loaded deep foundations.
- NEW - Expanded discussions of dynamic methods of deep foundation analysis.
- A multidisciplinary approach—Integrates geotechnical, structural, and construction aspects of foundation engineering.
- A strong presentation of basic principles and the underlying assumptions.
- Practical solutions to real design problems.
- Frequent references to uncertainties and reliability issues.
- Coverage of both geotechnical and structural issues.
- Extensive use of example problems.
- Questions and Practice Problems—Includes numerical problem solving, definitions, and short essay questions.
- Comprehensive problems at the end of each chapter.

New To This Edition

- Expanded coverage of earth retaining structures—Features separate full chapters on cantilever walls and sheet pile walls.
- A chapter on reliability-based design.
- Reorganized chapters on deep foundations.
- Revised coverage of laterally loaded deep foundations.
- Expanded discussions of dynamic methods of deep foundation analysis.
- More emphasis on the differences between strength requirements and serviceability requirements.

Contents

I. General Principles

1. Foundations in Civil Engineering
2. Performance Requirements
3. Soil Mechanics
4. Site Exploration and Characterization

II. Shallow Foundation Analysis and Design

5. Shallow Foundations
6. Shallow Foundations—Bearing Capacity
7. Shallow Foundations—Settlement
8. Spread Footings—Geotechnical Design
9. Spread Footings—Structural Design
10. Mats

III. Deep Foundation Analysis and Design

11. Deep Foundations
12. Deep Foundations—Structural Integrity
13. Deep Foundations—Axial Load Capacity Based on Static Load Tests
14. Deep Foundations—Axial Load Capacity Based on

Analytical Methods

15. Deep Foundations—Axial Load Capacity Based on Dynamic Methods
16. Deep Foundations—Lateral Load Capacity
17. Deep Foundations—Design

IV. Special Topics

18. Foundations on Weak and Compressible Soils
19. Foundations on Expansive Soils
20. Foundations on Collapsible Soils
21. Reliability-Based Design

V. Earth Retaining Structure Analysis And Design

- Earth-Retaining Structures
22. Lateral Earth Pressures
 23. Cantilever Retaining Walls
 24. Sheet Pile Walls
- Appendix A: Unit Conversion Factors
- Appendix B: Computer Software

About the Author

Donald P. Coduto, Professor of Civil Engineering, California State Polytechnic University, Pomona

An Introduction to Geotechnical Engineering, 2/e

Robert D. Holtz, William D. Kovacs, Thomas C. Sheahan

Pages: 864

Year: 2013

About the Book

An Introduction to Geotechnical Engineering 2/e, provides a descriptive, elementary introduction to “geotechnical engineering” with applications to civil engineering practice. It focuses on the engineering classification, behavior, and properties of soils necessary for the design and construction of foundations and earth structures. It includes chapters on Geology, Landforms, and the Origin of Geomaterials. The book has been updated to include many new useful engineering property correlations, as well as units on both SI and customary engineering. It also covers an introduction to vibratory and dynamic compaction, the method of fragments, the Schmertmann procedure for determining field compressibility, secondary compression, liquefaction, and an extensive use of the stress path method.

Features

- Focuses on the engineering classification, behavior, and properties of soils necessary for the design and construction of foundations and earth structures.
- Introduces vibratory and dynamic compaction, the method of fragments, the Schmertmann procedure for determining field compressibility, secondary compression, liquefaction, and an extensive use of the stress path method.

Contents

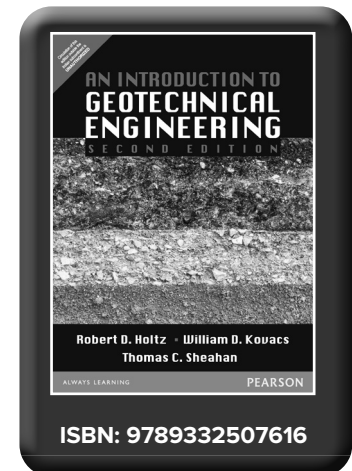
1. Introduction to Geotechnical Engineering
2. Index and Classification Properties of Soils
3. Geology, Landforms, and the Origin of Geo-Materials
4. Clay Minerals, Soil and Rock Structures, and Rock Classification
5. Compaction and Stabilization of Soils
6. Hydrostatic Water in Soils and Rocks
7. Fluid Flow in Soils and Rock
8. Compressibility of Soil and Rock
9. Time Rate of Consolidation
10. Stress Distribution and Settlement Analysis
11. The Mohr Circle, Failure Theories, and Strength Testing of Soil And Rocks
12. An Introduction to Shear Strength of Soils and Rock
13. Advanced Topics in Shear Strength of Soils and Rocks

About the Author(s)

Bob Holtz, PhD, PE, D.GE, has degrees from Minnesota and Northwestern, and he attended the Special Program in Soil Mechanics at Harvard under Professor A. Casagrande. Before coming to the UW in 1988, he was on the faculty at Purdue and Cal State-Sacramento. He has worked for the California Dept. of Water Resources, Swedish Geotechnical Institute, NRC-Canada, and as a consulting engineer in Chicago, Paris, and Milano.

William D. Kovacs, F. ASCE, Professor of Civil and Environmental Engineering Professor and former Chairman of the Department of Civil and Environmental Engineering from 1984 to 1990

Thomas C. Sheahan is a Professor and the Senior Associate Dean for Academic Affairs in the Department of Civil and Environmental Engineering at Northeastern University.



Soil Mechanics and Foundation Engineering, 2/e

P. Purushothama Raj

Pages: 928

Year: 2013



About the Book

The principles of soil mechanics and foundation engineering are dealt with in an elegant, yet simplified, manner in this text. It presents all the material required for a firm background in the subject, reinforcing theoretical aspects with sound practical applications.

The study of soil behavior is made lucid through precise treatment of the factors that influence it.

Features

- The measurement of soil properties is dealt with the conventions of the Bureau of Indian Standards. This included the methods of data collection, computation and presentation of results and limitations.
- Design of shallow foundations, pile foundations, drilled piers and caissons.
- Discusses the latest techniques of ground investigation and soil improvement.

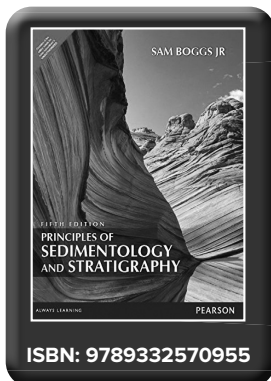
Contents

1. Soil Formation and Composition
2. Index Properties of Soils
3. Identification and Classification of Soils
4. Compaction of Soils
5. Permeability and Capillarity
6. Seepage
7. Stress and Stress Distribution in Soil
8. Consolidation and Consolidation Settlement
9. Shear Strength of Soils
10. Laboratory Measurement of Soil Properties
11. Lateral Earth Pressure
12. Earth- Retaining Structures
13. Stability of Slopes
14. Bearing Capacity of Soils
15. Shallow Foundations
16. Pile Foundation
17. Drilled Piers and Caisson Foundations
18. Ground Investigation
19. Soil Improvement
20. Embankment Dams
21. Dynamic Loading of Soil
22. Environmental Geotechnology
23. Introductory Rock Mechanics
24. Pavements

About the Author

Dr. P Purushothama Raj is Principal, Sri Aravindar Engineering College, Villupuram.

➡ ALSO AVAILABLE...



Principles of Sedimentology and Stratigraphy, 5/e

Sam Boggs Jr.

Pages: 568



Hydrology

Hydrology of Groundwater, 2/e

B R Chahar

Pages: 816

Year: 2024

About the Book

Hydrology of Groundwater focuses on the basic principles of groundwater movement in aquifers and management of groundwater and hence enables the readers to acquire a complete understanding of the groundwater. The book includes detailed coverage on basics and theory of groundwater flow, well hydraulics, aquifer characterisation, groundwater prospecting, water wells, contamination transport, groundwater management, etc. An ideal offering for undergraduate and graduate students as well as professionals in civil engineering, hydrogeology, groundwater engineering, water resources engineering, agricultural engineering, earth sciences, water resources management, geotechnical engineering, and environmental sciences.

Features

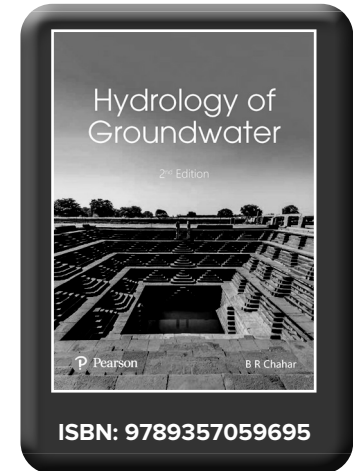
- Focused coverage on principles of groundwater flow, well hydraulics and management of groundwater
- Principles of groundwater movement in aquifers are presented through elaborate derivation of governing differential equations and their analytical solutions for simple boundary conditions
- Includes discussions on topics like groundwater flow solutions by complex analysis, stream depletion and flowing well problems and CAST that have been researched and developed by the author
- Groundwater management case studies from real scenarios are included
- Solved examples and numerical problems included are similar to end-semester examination of various Indian universities, colleges and other competitive examinations.

Contents

1. Groundwater: Introduction, Occurrence and Assessment
2. Groundwater: Aquifers and Indian Scenario
3. Principles of Flow in Porous Media
4. Theory of Groundwater Flow
5. Contaminant Transport in Groundwater
6. GE in Radial Coordinates and Steady State Solutions
7. Unsteady State Solutions to Confined Aquifer Problems
8. Unsteady State Solutions to Special Cases
9. Aquifer Characterisation
10. Groundwater Prospecting
11. Water Wells – Design, Construction, Development and Maintenance
12. Managed Groundwater Recharge
13. Saline Water Intrusion in Aquifers
14. Groundwater Modelling Techniques
15. Management of Groundwater Quantity
16. Management of Groundwater Quality
17. Flow Through Unsaturated Medium
18. Groundwater Flow Solution by Complex Analysis

About the Author

B R Chahar, Professor (HAG) of Civil Engineering Indian Institute of Technology Delhi New Delhi



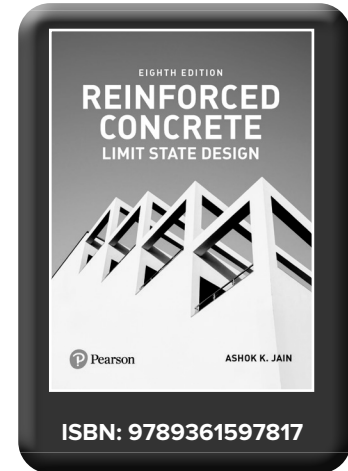
Reinforced Concrete

Reinforced Concrete - Limit State Design, 8/e

Ashok K Jain

Pages: 1144

Year: 2024



About the Book

This book, first published in 1983, has been thoroughly revised and updated to reflect the latest developments in Reinforced Concrete. There is more focus on the concepts and mechanics, learning activities through more explanations and examples, and learning assignments through more exercises. The intricacies of limit state design have been explained with the help of detailed explanations, numerous diagrams, and examples. Based on the current IS 456, IS 1343, IRC 112, IS 3370, IS 10262, IS 13920, and other relevant codes

Features

- Exhaustive coverage of concepts and mechanics behind limit state design of different structural members
- New! Chapter 3 – Properties of Concrete and Steel, Chapter 4 – Buildings and Loads, Chapter 14 – Staircases and Chapter 17 – Domes
- Explanations of the design intricacies through 160 design examples from real life projects, and detailing of reinforcement in members through figures
- More than 700 review questions

Contents

Part I: Plain Concrete

1. Materials for Concrete
2. Concrete Mix Design
3. Properties of Concrete and Steel

Part II: Reinforced Concrete

4. Buildings and Loads
5. Design Philosophies and Basics
6. Singly Reinforced Sections
7. Doubly Reinforced Sections
8. Flanged Sections
9. Shear and Bond
10. Serviceability Limit State
11. Detailing of Reinforcement
12. Design Examples
13. Continuous Beams and Slabs
14. Staircases
15. Torsion in Beams

16. Two-way Slabs

17. Domes
18. Columns and Walls
19. Foundations
20. Retaining Walls
21. Water Tanks

Part III: Prestressed Concrete

22. Introduction to Prestressed Concrete
23. Prestressed Concrete Beams

Part IV: Earthquake Resistant Construction

24. Detailing for Earthquake Resistant Construction
- Appendix A Useful References
- Appendix B Area of Bars
- Appendix C Dead and Live Loads
- Appendix D Maximum Bending Moment and Shear Force

About the Author

Dr Ashok K. Jain is a former Professor of Civil Engineering at the Indian Institute of Technology Roorkee (Formerly University of Roorkee), obtained B.E. and M.E. degrees with Honours from the University of Roorkee in 1972 and 1974, and doctorate degree from the University of Michigan, Ann Arbor in 1978. He has over 40 years of experience in exploring the behaviour of plain concrete, reinforced concrete and prestressed concrete, from lecture room to laboratory to design project to site inspections and investigations. He has designed numerous buildings, water tanks, STPs, bridges, retaining walls, and blast resistant structures. He has also investigated failure of many RC structures under normal and earthquake situations. He has conducted extensive research on non-linear analysis of buildings and bridges. A recipient of several awards, he has been a Research Fellow at the University of Michigan; a Visiting Professor at the McGill University, Montreal; Director, Malaviya National Institute of Technology, Jaipur, and Head of Civil Engineering Department, I.I.T. Roorkee. Prof. Jain embodies a unique combination of teaching, research, design consultancy, as well as a mentor and a philanthropist.

Reinforced Concrete Design, 9/e

Abi O Aghayere

Pages: 440

Year: 2019

About the Book

Reinforced Concrete Design integrates current building and material codes with realistic examples to give readers a practical understanding of this field and the work of its engineers. Using a step-by-step solution format, the text takes a fundamental, active-learning approach to analyzing the design, strength, and behavior of reinforced concrete members and simple reinforced concrete structural systems. Content throughout the 9th edition conforms to the latest version of ACI-318 Code. It expands discussion of several common design elements and practice issues, and includes more end-of-chapter problems reflecting real-world design projects.

Features

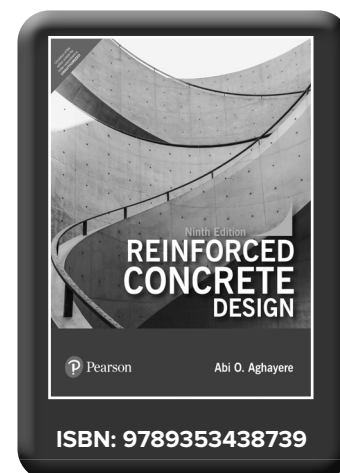
- Focus on the latest standards in concrete design and practice.
- Practical, real-world applications.
- Preparation for engineering work.

Contents

1. Materials and Mechanics of Bending, Concrete Slab Systems and Gravity Load Distribution in Concrete Slab Systems
2. Rectangular Reinforced Concrete Beams and Slabs: Tension Steel Only, Slabs-on-Grade
3. Reinforced Concrete Beams: T-Beams and Doubly Reinforced Beams
4. Shear and Torsion in Beams, and Corbels and Brackets
5. Development, Splices, and Simple Bar Cut-offs, Structural Integrity Reinforcement
6. Continuous Construction Design Considerations
7. Serviceability: Deflections, Cracking, and Floor Vibrations
8. Structural Walls — Retaining Walls, Basement Walls, Bearing Walls, and Shear Walls
9. Columns: Axial Load plus Bending, Biaxial Bending, and Slender Columns
10. Foundations: Spread Footings, Strip Footings, Combined Footings, Eccentrically Loaded Footings, Strap Footings
11. Prestressed Concrete Fundamentals
12. Concrete Formwork
13. Detailing Reinforced Concrete Structures
14. Practical Considerations in the Design of Reinforced Concrete Buildings

About the Author

Abi Aghayere is a professor of structural engineering in the Department of Civil, Architectural, and Environmental Engineering at Drexel University in Philadelphia and has more than 20 years design experience in the structural engineering consulting field.



Introduction to Hydrology, 5/e

Warren Viessman Jr., Gary L. Lewis

Pages: 624

Year: 2015

About the Book

For students who expect to become involved in programs that are concerned with the development, management and protection of water resources.

The Fifth Edition of *Introduction to Hydrology* has been redesigned to better acquaint future water engineers, scientists and managers with the basic elements of the hydrologic cycle. Its focus is on presenting the principles of hydrology in the context of their application to real-world problems. The book identifies data sources, introduces statistical analyses in the context of hydrologic problem-solving, covers the components of the hydrologic budget, discusses hydrograph analysis and routing, and introduces groundwater hydrology, urban hydrology, hydrologic models and hydrologic design. Many solved examples and problems serve to amplify the concepts presented in the text. Computer applications are discussed and appropriate Web addresses are provided.

Features

- NEW - Topical organization—Covers underlying principles of hydrology in chapters 1 - 10 while chapters 11 - 13 cover application of these principles to practical problems in the field.
- Provides logical course development and basis for advanced studies in hydrology.
- NEW - Comprehensive coverage.
- Covers all aspects of the hydrologic cycle, and the manner in which they may be modified to deal with floods, droughts, potable water supply and urban drainage. Chapters 1, 4-8, and 10 cover the key components of the hydrologic cycle and chapters 11 - 13 and section 10.6 cover measures that can be taken to develop and control water.
- Numerous solved examples—Using both English and metric units.
- Enhances student comprehension and aids in homework and test preparation.
- Presentation of hydrologic models and modeling.
- Provides practice-oriented experiences for students and demonstrates how the basic hydrologic processes can be incorporated into engineering designs and water resources management processes.

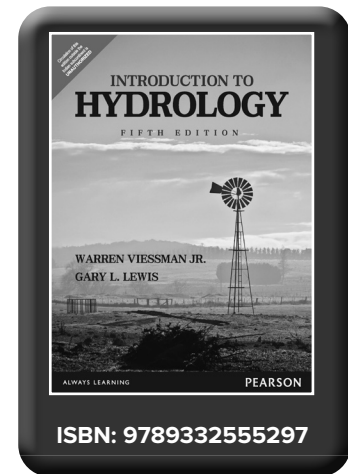
Contents

1. Introduction
2. Hydrologic Measurements and Data Sources
3. Statistical Methods In Hydrology
4. Precipitation
5. Interception and Depression Storage
6. Evaporation and Transpiration
7. Infiltration
8. Surface Water Hydrology
9. Hydrographs
10. Groundwater Hydrology
11. Urban Hydrology
12. Hydrologic Simulation and Streamflow Synthesis
13. Hydrology in Design

About the Author(s)

Warren Viessman Jr., University of Florida

Gary L. Lewis, Consulting Engineer



Elementary Engineering Hydrology

M. J. Deodhar

Pages: 408

Year: 2009



About the Book

Elementary Engineering Hydrology is a textbook for undergraduate and diploma students of civil engineering. It provides a comprehensive coverage of all the essential aspects of hydrology. To make it easy for students to grasp the concepts, all important topics have been divided into sub-topics, lending clarity to the subject matter. The text is interspersed with numerous figures and tables, and a wide range of solved problems to illustrate the underlying concepts and techniques effectively. Simple and comprehensible for beginners in the course, this book also contains a host of additional information, by way of appendices, including India's National Water Policy, water resources of India and also a guide to using survey maps. These features of the book will make it an invaluable reference book for practicing engineers as well.

Features

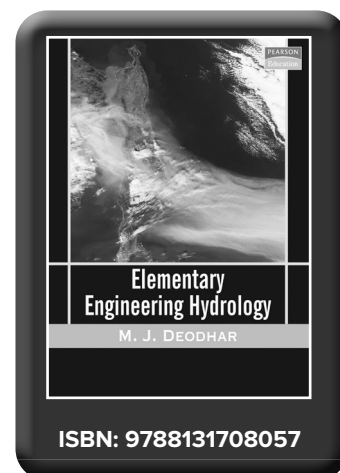
- Chapter organization based on the progression of the stages of the hydrologic cycle
- Inclusion of recent developments in the field of discharge measurement of high velocity fluids, and rainfall simulation to measure the infiltration rate
- Separate chapters devoted to evaporation and transpiration, precipitation, infiltration, discharge measurement, etc.
- An excellent selection of a wide range of solved problems, interspersed in the text as well as at the end of each chapter
- Review questions, objective-type questions and numerous practice problems to aid self-study

Contents

1. Introduction
2. Hydrometeorology
3. Evaporation and Transpiration
4. Precipitation
5. Infiltration
6. Hydrograph
7. Runoff
8. Floods
9. Discharge Measurement
10. Flood Routing
11. Groundwater

About the Author

Professor M. J. Deodhar graduated in 1957 and completed his postgraduate studies in Hydraulics and Dam Engineering in 1959 from the University of Pune. He started his career as Assistant Research Officer in Maharashtra Engineering Research Institute, Nasik, and later became Professor and Head of the Civil Engineering Department in the Government College of Engineering at Karad, Amaravati and Pune. He retired as Principal of K. K. Wagh College of Engineering, Nasik. He has been Visiting Professor and also Emeritus Fellow, AICTE, New Delhi. He has worked as technical expert for UPSC, MPSC, UP PSC and Himachal Pradesh PSC, and as Chairman, Board of Studies in Civil Engineering. He has also been a member of Faculty of Engineering and Technology and the Academic Council of universities in Maharashtra. He has published technical articles and also presented papers at the international conferences, the prominent being the International Association of Hydraulic Engineering and Research held at San Francisco and Beijing. He has also conducted and attended short-term courses on behalf of the Indian Society for Technical Education, New Delhi, and UNESCO. With over 50 years of research and teaching experience behind him, Professor Deodhar was awarded the 'best teacher' award and 'outstanding engineer' award by the Institution of Engineers, Nasik Local Centre. Presently, he is working as Technical Advisor for Coastal Power Consultants, Pune.



Smart Cities

Introduction to Smart Cities

Anil Kumar

Pages: 400

Year: 2019



About the Book

In the domain of city planning, smart cities made perceivable differences in easing city life, adding to its quality while keeping its people connected, engaged and informed. This book aims to introduce the idea of 'Smart cities' comprehensively by covering the conceptual basis and the principles in practice systematically and sector-wise. Written lucidly, covering both possible new attempts and retrofitting options in turning smart, the book is an all in one handy volume for beginners to city enthusiasts to advanced learners.

Features

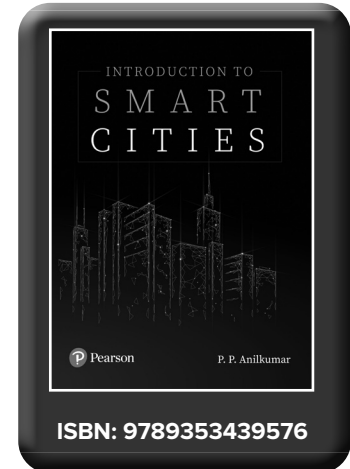
- Contains a concise story of cities and major innovations in city development.
- Chapters on Mobility, Energy, Governance, Water Supply, Waste Management, Economy, Buildings and Environment as core sectors of smart city transformation.
- Dedicated chapter on ICT.
- Chapters on International and Indian case studies cover potential interventions.
- Review Questions and Project Ideas added to test level of comprehension.

Contents

1. Story of Cities
2. Urbanization and Sustainable Cities
3. Smart Cities: State of the Art
4. Smart Urban Mobility
5. Smart Energy
6. Smart Governance
7. Smart Water Management
8. Smart Waste Management
9. Smart Economy
10. Smart Buildings
11. Smart Environment
12. ICT for Smart Cities
13. Smart Cities: International Cases
14. Smart Cities: Indian Cases

About the Author

Professor Department of Architecture and Planning National Institute of Technology Calicut.



Structural Analysis

Dynamics of Structures: Theory and Applications to Earthquake Engineering, 6/e

Anil K. Chopra

Pages: 1012

Year: 2025



About the Book

Dynamics of Structures introduces the theory of structural dynamics and its application to earthquake analysis, response, design and evaluation of structures. Expert Anil K. Chopra presents this often difficult subject as simply as possible. No prior knowledge of structural dynamics is assumed, and the presentation is detailed enough for self-study. Worked-out examples, figures and real photos expand on the text. The 6th Edition includes a new chapter on dynamics of building-soil interaction. Updates and revisions throughout reflect current building codes, methods and research.

Features

- Compares structural idealizations to the properties of real structures.
- Presents the theory of dynamic response of structures with an emphasis on physical insight into analytical procedures.
- Shows how to apply structural dynamics theory to practical problems in earthquake analysis, design and evaluation of structures.
- Over 125 worked-out examples illustrate analytical procedures in depth. 600 figures enhance understanding of the dynamic response of structures. Photographs of structural motion during earthquakes provide real-world context.

Contents

PART I: SINGLE-DEGREE-OF-FREEDOM SYSTEMS

1. Equations of Motion, Problem Statement, and Solution Methods
2. Free Vibration
3. Response to Harmonic and Periodic Excitations
4. Response to Arbitrary, Step, and Pulse Excitations
5. Numerical Evaluation of Dynamic Response
6. Earthquake Response of Linear Systems
7. Earthquake Response of Inelastic Systems
8. Generalized Single-Degree-of-Freedom Systems

PART II: MULTI-DEGREE-OF-FREEDOM SYSTEMS

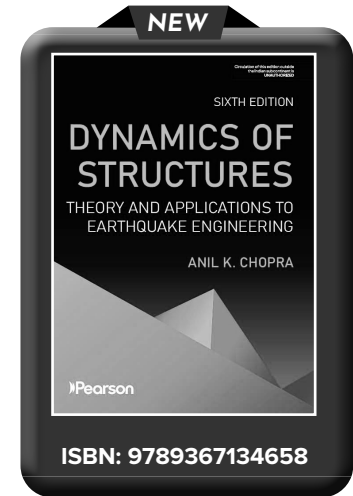
9. Equations of Motion, Problem Statement, and Solution Methods
10. Free Vibration
11. Damping in Structures
12. Dynamic Analysis and Response of Linear Systems

13. Earthquake Analysis of Linear Systems

14. Analysis of Nonclassically Damped Linear Systems
15. Reduction of Degrees of Freedom
16. Numerical Evaluation of Dynamic Response
17. Systems with Distributed Mass and Elasticity
18. Introduction to the Finite Element Method

PART III: EARTHQUAKE RESPONSE, DESIGN, AND EVALUATION OF MULTISTORY BUILDINGS

19. Earthquake Response of Linearly Elastic Buildings
20. Earthquake Analysis and Response of Inelastic Buildings
21. Earthquake Dynamics of Base-Isolated Buildings
22. Earthquake Dynamics of Building–Soil Interaction
23. Structural Dynamics in Building Codes
24. Structural Dynamics in Building Evaluation Guidelines



About the Author

Anil K. Chopra - University of California at Berkeley

Matrix Method of Structural Analysis

Kothandaraman Vasudevan

Pages: 800

Year: 2023



About the Book

Matrix Methods of Structural Analysis presents the fundamental aspects of matrix analysis of structures in an easy-to-understand manner. Designed as a textbook for the undergraduate students of civil engineering and postgraduate students of structural engineering, this comprehensive book has been written after teaching the subject for more than two decades and the content has been class tested thoroughly. It is believed that this book will enhance the readers' insight into the field of structural analysis.

Features

- Two of the matrix approaches - flexibility matrix method by using system approach and stiffness matrix method by using system and element approaches are explained in detail
- Basic analysis methods, which form the basis for matrix methods of structural analysis such as slope-deflection method and moment distribution method are also dealt with examples
- More than 100 solved examples are provided without skipping intermediate steps to help students understand better
- More than 250 exercise problems with final answers are added to help students apply what they have learnt in theory and hone their problem-solving skills

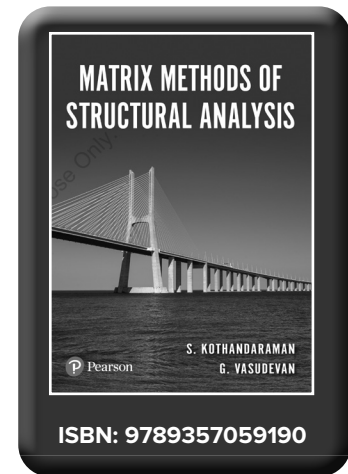
Contents

1. Basic concepts in structural analysis
2. Matrix algebra and solution techniques
3. Slope-deflection and moment distribution methods
4. Basics of flexibility and stiffness matrix methods
5. Flexibility Matrix Method - Plane Trusses
6. Flexibility matrix method - Space trusses
7. Flexibility matrix method - Beams
8. Flexibility matrix method - Plane frames
9. Stiffness matrix method (system approach) - Plane trusses
10. Stiffness matrix method (system approach) - Beams
11. Stiffness matrix method (system approach) - Plane frames
12. Stiffness matrix method (element approach) - Plane trusses
13. Stiffness matrix method (element approach) - Space trusses
14. Stiffness matrix method (element approach) - Beams
15. Stiffness matrix method (element approach) - Plane frames
16. Stiffness matrix method (element approach) - Grid frames
17. Stiffness matrix method (element approach) - Space frames

About the Author(s)

Dr Kothandaraman, Principal (Rtd), Pondicherry Engineering College (Upgraded as Puducherry Technological University), Puducherry

Dr. Vasudevan. G, Assistant Professor of Civil Engineering, Perunthalaivar Kamarajar Institute of Engineering and Technology, Karaikal



Dynamics of Structures with Earthquake Engineering, 2/e

Ashok K. Jain

Pages: 768

Year: 2023



About the Book

This book is an ideal offering for undergraduate and postgraduate students pursuing a first course in Earthquake Engineering, Dynamics of Structures or Structural Dynamics. The fundamentals of dynamic behaviour of structures and earthquake engineering have been vastly expanded with this edition. This book incorporates various Indian, American, and European specifications including FEMA documents.

Features

- Lucid coverage of the theory of dynamic response of single- and multi-degree-of-freedom systems, elastic and inelastic response spectra, and acceleration-displacement response spectra
- Exhaustive coverage of computation of modal response, air blast loading, static and dynamic wind loads, algorithms for linear and non-linear analysis, elastic and inelastic behaviour, ductility, energy dissipating systems, and performance-based design
- NEW! Chapter 13-Analysis of Bridges for Earthquake Force and Chapter 14-Analysis of Liquid Retaining Structures for Earthquake Force
- Enhanced pedagogy including over 175 solved examples and 400 review problems along with numerous analytical problems

Contents

Part 1 Single-Degree of Freedom Systems

1. Introduction to Structural Dynamics
2. Single Degree of Freedom System: Free Vibrations
3. Single Degree of Freedom System: Harmonic Loading
4. Single Degree of Freedom System: Periodic Loading
5. Single Degree of Freedom System: Impulse Loading
6. Single Degree of Freedom System: Machine Vibrations
7. Direct Integration of Equation of Motion
8. Elastic Response Spectra

Part 2 Multi-Degree of Freedom Systems

9. Two-degree of Freedom System
10. Multi-degree of Freedom Systems

11. Systems with Distributed Mass and Elasticity

Part 3 Application to Earthquake Engineering

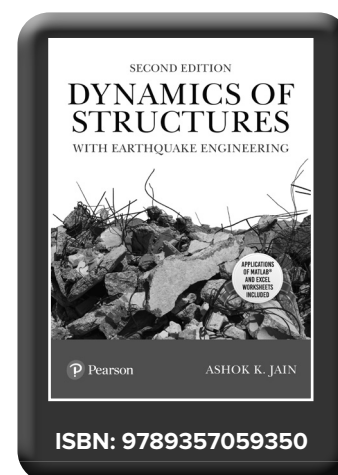
12. Analysis of Buildings for Earthquake Force
13. Analysis of Bridges for Earthquake Force
14. Analysis of Liquid Retaining Structures for Earthquake Force

ONLINE CHAPTERS

15. Nonlinear Analysis of Structures
16. Performance-Based Design of Structures

Part 4 Wind Load

17. Wind Load



About the Author

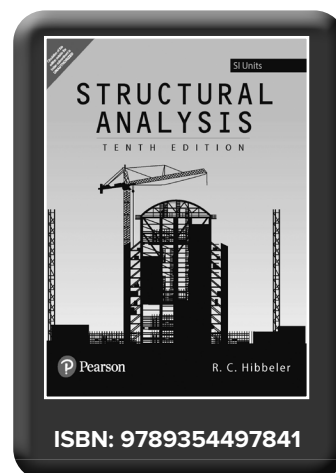
Dr Ashok K. Jain is a former Professor of Civil Engineering at the Indian Institute of Technology Roorkee.

Structural Analysis, 10/e in SI Units

R. C. Hibbeler

Pages: 744

Year: 2022



About the Book

Structural Analysis, 10e in SI Units, presents the theory and applications of structural analysis as it applies to trusses, beams, and frames. Through its student-friendly, clear organization, the text emphasizes developing the ability to model and analyze a structure in preparation for professional practice. The text is designed to ensure students taking their first course in this subject understand some of the more important classical methods of structural analysis, in order to obtain a better understanding of how loads are transmitted through a structure, and how the structure will deform under load. The large number of problems covers realistic situations involving various levels of difficulty.

Features

- The organization and approach of the text presents a structured method for introducing each new definition or concept, and makes the book a convenient resource for later reference and review.
- Procedures for Analysis is a unique feature that provides students with a logical and systematic method for applying theory and building problem-solving skills. The example problems are solved using this outlined method in order to clarify the steps needed for solution.
- NEW! Structural modeling is discussed throughout, especially as it applies to modeling a structure for a computer analysis.
- Photographs throughout the book demonstrate how principles of structural analysis apply to real-world situations and help students visualize difficult concepts.
- NEW! Preliminary problems offer simple applications of concepts and help students develop problem-solving skills before attempting to solve any of the standard problems that follow.

Contents

1. Types of Structures and Loads
2. Analysis of Statically Determinate Structures
3. Analysis of Statically Determinate Trusses
4. Internal Loadings Developed in Structural Members
5. Cables and Arches
6. Influence Lines for Statically Determinate Structures
7. Deflections
8. Deflections Using Energy Methods
9. Analysis of Statically Indeterminate Structures by the Force Method
10. Displacement Method of Analysis: Slope-Deflection Equations
11. Displacement Method of Analysis: Moment Distribution
12. Approximate Analysis of Statically Indeterminate Structures
13. Beams and Frames Having Nonprismatic Members
14. Truss Analysis Using the Stiffness Method
15. Beam Analysis Using the Stiffness Method
16. Plane Frame Analysis Using the Stiffness Method
17. Structural Modeling and Computer Analysis
- Appendix A. Matrix Algebra for Structural Analysis
- Preliminary Problems and Fundamental Problems Solutions
- Answers to Selected Problems
- Index

About the Author

R.C. Hibbeler graduated from the University of Illinois at Urbana - Champaign with a BS in Civil Engineering (majoring in Structures) and an MS in Nuclear Engineering. He obtained his PhD in Theoretical and Applied Mechanics from Northwestern University. Professor Hibbeler's professional experience includes postdoctoral work in reactor safety and analysis at Argonne National Laboratory, and structural and stress analysis work at Chicago Bridge and Iron along with Sargent and Lundy in Chicago. He has practiced engineering in Ohio, New York and Louisiana.

Professor Hibbeler currently teaches both civil and mechanical engineering courses at the University of Louisiana - Lafayette. In the past, he has taught at the University of Illinois at Urbana - Champaign, Youngstown State University, Illinois Institute of Technology, and Union College.

Structural Analysis: Skills for Practice

James Hanson

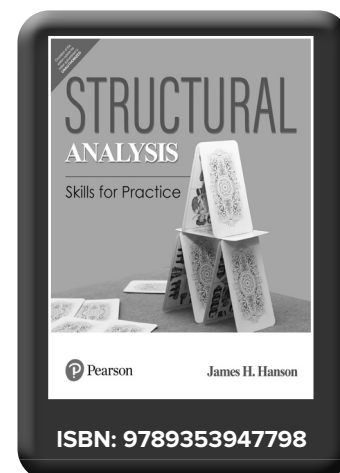
Pages: 928

Year: 2020



About the Book

Structural Analysis: Skills for Practice encourages engineering students to develop their intuition and the habit of evaluating the reasonableness of structural analysis results. The author presents examples and homework problems that incorporate a consistent thought process structure-guess, calculate, and evaluate their results-helping students develop the metacognitive skill of thinking about their own thought process. Drawing upon the evaluation skills gathered from a six year project with experienced structural engineers, Hanson's *Structural Analysis* helps students learn skills to transition from novice to expert faster and become more competent in their careers.



Features

- Help students develop the skills of developing their intuition and evaluating result.
- Teach engineering content students will use as practioners.
- Student-friendly, readable approach to structural analysis content

Contents

- | | |
|--|---|
| 1. Loads and Structure Idealization | 9. Approximate Analysis of Rigid Frames |
| 2. Predicting Results | 10. Approximate Lateral Displacements |
| 3. Cables and Arches | 11. Diaphragms |
| 4. Internal Force Diagrams | 12. Force Method |
| 5. Deformations | 13. Moment Distribution Method |
| 6. Influence Lines | 14. Direct Stiffness Method for Trusses |
| 7. Introduction to Computer Aided Analysis | 15. Direct Stiffness Method for Frames |
| 8. Approximate Analysis of Indeterminate Trusses and Braced Frames | |

About the Author

For over twenty years, **Dr. James Hanson** has blended his two greatest passions: engineering and teaching. His undergraduate and graduate degrees come from Cornell University where his engineering and teaching skills started developing. He further developed those skills as a structural engineer for a large chemical company and as an engineer officer in the US Army. As a result, he is a licensed professional engineer in New York and Indiana.

Advanced Surveying - Total Station, GPS, GIS, Remote Sensing, Drone and Hydrographic Surveying, 3/e

Satheesh Gopi, R. Sathikumar, N. Madhu

Pages: 528

Year: 2025



About the Book

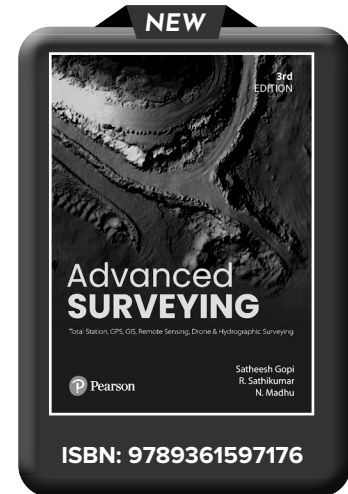
The third edition of Advanced Surveying has been thoroughly revised and updated to include the latest advancements in surveying. It also presents the modern trends of remote sensing, GPS and GIS with simple explanations and large number of illustrations. Working professionals and students studying geoinformatics/geomatics will also find the book extremely useful.

Features

- New – Chapters on Hydrographic Surveying and Surveying and Mapping Using Drones
- Exhaustive coverage on Global Positioning Systems including surveying using GPS
- Detailed and updated illustrations of Surveying using Total Station
- Covers modern surveying instruments such as automatic levels, digital levels, micro-optic theodolites, LIDAR, digital planimeters and laser levels
- Dedicated chapter on the latest Applications of GIS with case studies
- New Photographs and illustrations for better visualization

Contents

1. Fundamental Concepts of Geographic Information System
2. GIS Data Models
3. Data Acquisition
4. Maps and Map Projections
5. The Coordinate System
6. Spatial Analysis
7. Application of GIS
8. Basics of Total Station
9. Electronic Distance Measurements
10. Surveying Using Total Station
11. Data Collection Procedures
12. Automatic Level, Digital Level and Optical Theodolites
13. Aerial Surveying
14. Fundamentals of Remote Sensing
15. Basics of Global Positioning System
16. Surveying Using Global Positioning System
17. Hydrographic Surveying
18. Surveying and Mapping Using Drones



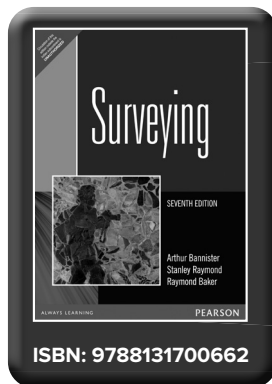
About the Author

Satheesh Gopi, the principal contributor to this book, has over 35 years' experience as a hydrographer. He retired as Deputy Chief Hydrographer from the Hydrographic Survey Wing of Kerala Port Department. He graduated in civil engineering from the College of Engineering, Thiruvananthapuram and holds master's degree in Construction Engineering and Management from Anna University, Chennai. He also holds master's degrees in Information Technology, and Disaster Management. He has worked with the Survey Department of Government of Dubai for 5 years as a Senior Hydrographer. He is the author of the book Global Positioning System – Principle and Applications and Basic Civil Engineering. He has published research papers on global positioning system, advanced surveying, digital cartography and hydrography in various journals of national repute. Most of his research papers were presented in international conferences, such as International Federation of Surveyors (FIG), International Hydrographic Organization (IHO) and Map Middle East. He has worked as guest faculty in reputed engineering colleges and universities. He is a member of Institution of Engineers and life member of Indian Cartographic Association.

R. Sathikumar retired from Government service as Principal, Government College of Engineering, Burton Hill, Thiruvananthapuram. He received his post-graduate degree in Transportation Engineering from IIT Kanpur in 1989 and also pursued his Ph.D. from IIT Roorkee in 1996.

N. Madhu is a retired Professor (Civil) from the College of Engineering, Thiruvananthapuram. He obtained his M.Tech. in Traffic and Transportation Engineering from IIT Madras in 1991.

➡ ALSO AVAILABLE...



Surveying, 7/e

**A. Bannister /
Stanley Raymond /
Raymond Baker**

Pages: 512

Pavement Design

Pavement Analysis and Design, 2/e

Yang H. Huang

Pages: 792

Year: 2008



About the Book

This up-to-date text covers both theoretical and practical aspects of pavement analysis and design. It includes some of the latest developments in the field, and some very useful computer softwares developed by the author with detailed instructions.

Features

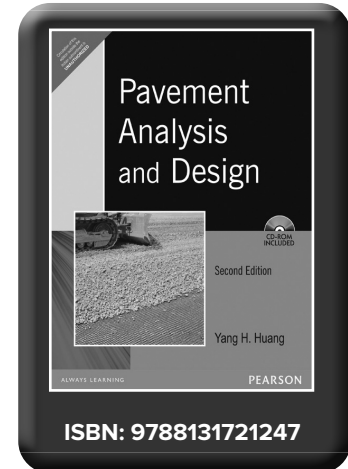
- **NEW - KENPAVE Windows program:** Based on the mechanistic-empirical method; written using Microsoft Visual Basic 6.0; combines the flexible and rigid pavements into a single package together with the addition of new input programs and computer graphics.
 - ◆ Demonstrates to students how theory can be put into practice, and gives them a better understanding of the pavement design process.
 - ◆ Serves as a useful tool for the structural design of raft foundations—an important subject in geotechnical engineering.
- **NEW - Revised material on the AASHTO overlay design method.**
 - ◆ Reflects the AASHTO design guide which was revised in 1993.
- **NEW- Added developments and information throughout, i.e.,** a new method based on the Mohr-Coulomb failure criterion; and new comparisons between KENLAYER and the latest Windows version of MICH-PAVE.
 - ◆ Keeps the book and students current, and broadens the scope of knowledge contained in both.
- **NEW - Three additional appendices: Superpave;** Pavement Management System; and Preview of 2002 Design Guide.
 - ◆ Provides students with the most current information available while new publications by the American Association of State Highway and Transportation Officials are being approved and implemented.

Contents

- | | |
|--|------------------------------|
| 1. Introduction | 8. Drainage Design |
| 2. Stresses and Strains in Flexible Pavements | 9. Pavement Performance |
| 3. KENLAYER Computer Program | 10. Reliability |
| 4. Stresses and Deflections in Rigid Pavements | 11. Flexible Pavement Design |
| 5. KENSLABS Computer Program | 12. Rigid Pavement Design |
| 6. Traffic Loading and Volume | 13. Design of Overlays |
| 7. Material Characterization | |

About the author

Yang H. Huang, University of Kentucky



Transportation Engineering

Traffic Engineering, 5/e

Roger P Roess, Elena S Prassas, William R McShane

Pages: 800

Year: 2019

About the Book

Traffic Engineering, 5th Edition focuses on the key engineering skills required to practice traffic engineering. It presents both fundamental theory and a broad range of its applications to solve modern problems and gives students an understanding of and appreciation for planning, design, management, construction, operation, control, and system optimization. It also includes the latest in industry standards and criteria, new material and updates to existing material, and new homework problems.

Features

- **New! Latest standards and criteria.**
- **New! Content on unsignalized intersections,** roundabouts, alternative intersections, interchanges, operation and analysis of facilities, and more.
- **Updated and extended content on signalized intersections,** signal design and timing, and signal hardware is included.
- **New! Supporting material on statistical analyses.**
- **New - More than half of the homework problems for**

Contents

I. Basic Concepts and Characteristics

1. Introduction
2. Transportation Modes and Characteristics
3. Road-User, Vehicle, and Roadway Characteristics
4. Communicating with Drivers: Traffic Control Devices
5. Traffic Stream Characteristics
6. The Concepts of Demand, Volume, and Capacity
7. Level of Service and the Highway Capacity Manual: History and Fundamental Concepts
8. Intelligent Transportation Systems

II. Traffic Studies and Programs

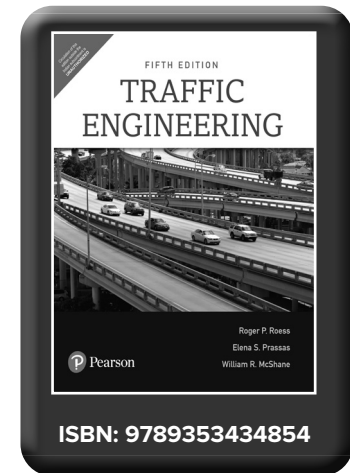
9. Traffic Data Collection and Reduction Methodologies
10. Traffic Volume Studies and Characteristics
11. Speed, Travel Time, and Delay Studies
12. Highway Traffic Safety: An Overview
13. Parking: Characteristics, Studies, Programs, and Design
14. Traffic Impact Studies and Analyses

III. Interrupted Flow Facilities: Design, Control, and Level of Service

15. The Hierarchy of Intersection Control
16. Traffic Signal Hardware
17. Fundamentals of Intersection Design and Layout
18. Principles of Intersection Signalization
19. Fundamentals of Signal Timing and Design: Pre-timed

most chapters are new to this edition.

- **The text is organized into four major functional parts** and presented in an accessible format, giving students a clear and logical framework to learn the concepts.
- **Numerous sample problems and illustrations** demonstrate the procedures and methodologies as they are used in practice.
- **Important computer programs** demonstrate solutions throughout the text.



About the Author(s)

Dr. Roger P. Roess is Department Head in the Department of Civil Engineering at Polytechnic Institute of NYU.

Elena S. Prassas is an Associate Professor in the Department of Civil Engineering at Polytechnic Institute of NYU. She earned her Doctor of Philosophy and Master of Science from Polytechnic University, and her Bachelor of Arts from the State University of New York, Oneonta. She is a Member of TRB's Highway Capacity and Quality of Service Committee (HCQSC), the Chair of the HCQSC Signalized Intersection Subcommittee, and a Member of both the ITE and WTS.

William R. McShane is the Vice President of Operations and Dean of Engineering at Polytechnic University. He earned his B.S.E.E from Manhattan College and his M.S. and Ph.D. in Systems Engineering from Polytechnic University. His areas of interest include quality control, controls and simulation, and engineering economics.

Transportation Engineering: An Introduction, 3/e

C. Jotin Khisty, B. Kent Lall

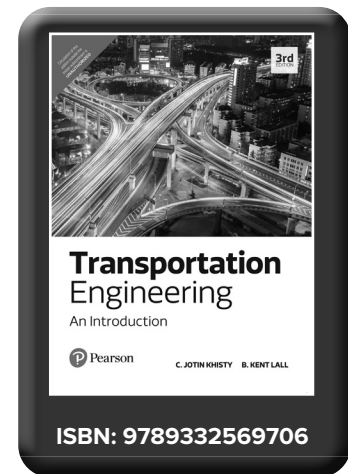
Pages: 840

Year: 2017



About the Book

Pearson brings to you the third edition of *Transportation Engineering*, which offers students and practitioners a detailed, current, and interdisciplinary introduction to transportation engineering and planning. This much praised and widely recommended text has been revered for its wide spectrum coverage encompassing both traditional principles—traffic engineering, transportation planning and non-traditional considerations transportation economics, land use, energy, public transport, transportation systems management.



Features

- The text is built on ideas, concepts, and observations that students are likely to be most familiar with, e.g., roads, streets, highways, buses, bicyclists, pedestrians and so on.
- Organization of the book and individual chapters has been carefully planned for easy transition from one to another.
- Quantitative and policy-oriented topics are incorporated, each supported by numerous worked examples and problems of varying complexity.
- Appendix on Statistics for Transportation Engineers provided for easy reference.
- Examples and exercises that illustrate real-world problems and require creativity and critical thinking."

Contents

- | | |
|--|---|
| 1. Transportation as a System | 10. Public Passenger Transportation |
| 2. Transportation Economics | 11. Urban Transportation Planning |
| 3. The Land-Use/Transportation System | 12. Local Area Traffic Management |
| 4. Vehicle and Human Characteristics | 13. Energy Issues Connected with Transportation |
| 5. Traffic Flow Characteristics | 14. TSM Planning: Framework |
| 6. Geometric Design of Highways | 15. Evaluation of Transportation Improvement |
| 7. Highway Capacity | 16. Transportation Safety |
| 8. Intersection Control and Design | |
| 9. At-Grade Intersection Capacity and Level of Service | |

About the Author(s)

C. Jotin Khisty has been a Professor of civil engineering and the Director of the Transportation and Infrastructure program at the Illinois Institute of Technology, Chicago.

B. Kent Lall has been a Professor of civil engineering at Portland State University, Portland.

Transportation Engineering and Planning, 3/e

C. S. Papacostas, P. D. Prevedouros

Pages: 704

Year: 2015

About the Book

For a course in transportation engineering in the Civil Engineering Department. This detailed, interdisciplinary introduction to transportation engineering serves as a comprehensive text as well as a frequently cited reference. It begins with the basic sciences, mathematics, and engineering mechanics, and gradually introduces new concepts concerning societal context, geometric design, human factors, traffic engineering, and simulation, transportation planning, evaluation.

Features

- NEW - Restructured--Organized in four main sections: DESIGN AND OPERATION (includes basic engineering principles, geometric design, human factors and traffic engineering); SYSTEMS (includes transportation modes, urban transportation, intelligent transportation systems [ITS], transportation planning and forecasting); IMPACTS (includes traffic impact studies, noise and pollution, and evaluation of transportation alternatives); and SUPPORTING ELEMENTS (such as economics, statistics, probability, queuing and software for traffic simulation and transportation analysis).
- NEW - Updated coverage on Transportation Modes.
- NEW - Updated coverage on Urban Systems--With extensive coverage of Intelligent Transportation Systems and the Quantification of Congestion.
- NEW - Expanded Capacity Analyses--Of bikeway, freeway, intersection, pedestrian and transit facilities based on HCM 2000.
- Coverage of Traffic Calming and basic Roundabouts.
- Extensive coverage of transportation software-(Ch. 15).
- NEW - Expanded coverage of Actuated Controllers--With numerous realistic case studies for Signal Design and Capacity Analysis.
- NEW - Updated Demand Modeling and Forecasting.
- NEW - Updated Traffic Impact Studies.
- Carefully chosen examples--Most accompanied by discussion and interpretations of results.
- Develops and illustrates concepts.
- Exercises--Cover a full range of difficulty.
- Gives students hands-on practice in applying concepts.

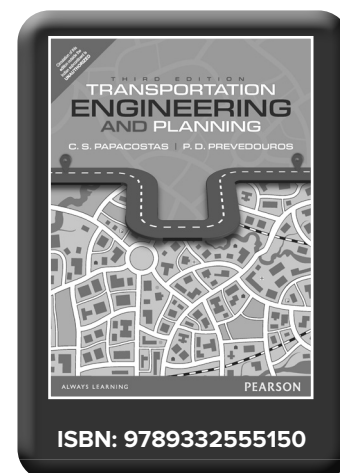
Contents

1. Introduction and Background
2. Roadway Design
3. Traffic Stream Flow Models.
4. Capacity and Level of Service Analysis
5. Transportation Modes
6. Urban and Intelligent Transportation Systems
7. Transportation Planning
8. Travel-Demand Forecasting
9. Traffic Impact and Parking Studies
10. Air Quality, Noise, and Energy Impacts
11. Evaluation and Choice
12. Elements of Engineering Economy
13. Probability and Statistics
14. Queuing and Simulation
15. Transportation Software

About the Author(s)

C.S. Papacostas, both of University of Hawaii, Manoa

P.D. Prevedouros, both of University of Hawaii, Manoa



Water Resources Engineering

Water and Wastewater Technology, 7/e

Mark J. Hammer, Sr., Mark J. Hammer, Jr.

Pages: 472

Year: 2015



About the Book

The new seventh edition of *Water and Wastewater Technology* continues its tradition of coverage water processing principles and modern management practices, but now integrates a new emphasis on sustainability throughout.

Comprehensive coverage of topics such as:

- Water processing
- Water distribution
- Wastewater collection
- Conventional and advanced wastewater treatment
 - Sludge processing

Features

- Coverage of new technologies.
- Water supply and water sustainability woven throughout.
- Coverage of energy reduction opportunities, and other processes important to water sustainability.
- Extensive use of illustrations to explain concepts and demonstrate modern equipment and facilities.
- Extensive use of charts, diagrams, and tables to make the mathematics more accessible.

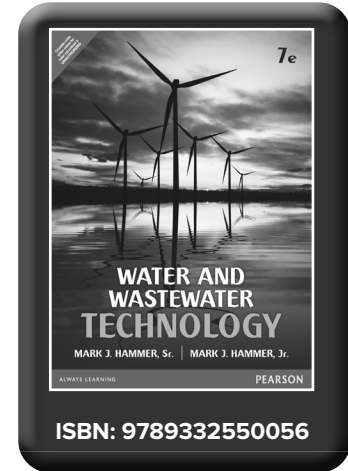
Contents

- | | |
|-------------------------------|---|
| 1. Introduction | 9. Wastewater Flows and Characteristics |
| 2. Chemistry | 10. Wastewater Collection Systems |
| 3. Biology | 11. Wastewater Processing |
| 4. Hydraulics and Hydrology | 12. Wastewater Systems Capacity, Management, Operation, and Maintenance |
| 5. Water Quality | 13. Advanced Wastewater Treatment |
| 6. Water Distribution Systems | 14. Water Reuse |
| 7. Water Processing | |
| 8. Operation of Waterworks | |

About the author(s)

Mark Hammer Sr., Emeritus Professor of Civil Engineering, is a writer of Environmental Engineering publications in the United States and Saudi Arabia. During his long tenure as a professor at the University of Nebraska-Lincoln, Dr. Hammer also served as the Director of the Environmental Protection Agency Grant in Water Quality Control. Professor Hammer has taught at the King Fahd and King Abdulaziz Universities in Saudi Arabia where he conducted environmental engineering research in addition to his teaching responsibilities. Mark J. Hammer Sr. is an independent consultant in Lincoln, Nebraska,

Mark J. Hammer Jr., is with HDR Engineering, Inc.



Waste Water Engineering

Water Supply and Pollution Control, 8/e

Warren Viessman Jr., Mark J. Hammer, Elizabeth M. Perez, Paul A. Chadik

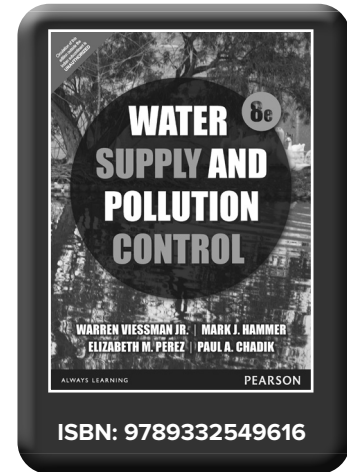
Pages: 752

Year: 2015



About the Book

The Eighth Edition of this bestselling text has been revised and modernized to meet the needs of today's environmental engineering students who will be engaged in the design and management of water and wastewater systems. It emphasizes the application of the scientific method to problems associated with the development, movement, and treatment of water and wastewater. Recognizing that all waters are potential sources of supply, the authors present treatment processes in the context of what they can do, rather than dividing them along clean water or waste water lines. An abundance of examples and homework problems amplify the concepts presented.



Features

- The interconnectedness of all potential water sources is illustrated by the text's wide breadth of coverage – Water development, distribution, and use as well as water and wastewater development are all explored.
- Prominent coverage of monitoring drinking water for pathogens highlights this topic – an increasing concern as the security of drinking water becomes more critical.
- Expanded and updated material on indirect reuse of water for augmenting drinking water supplies gives prominence to this increasingly important component of water resources development.

Contents

- | | |
|---|--|
| 1. Introduction | 8. Water Quality |
| 2. Water Resources Planning and Management | 9. Systems for Treating Wastewater and Water |
| 3. The Hydrologic Cycle and Natural Water Sources | 10. Physical Treatment Processes |
| 4. Alternative Sources of Water Supply | 11. Chemical Treatment Processes |
| 5. Water Use Trends and Forecasting | 12. Biological Treatment Processes |
| 6. Conveying and Distributing Water | 13. Processing of Sludges |
| 7. Wastewater Collection and Stormwater Engineering | |

About the Author(s)

Warren Viessman, Jr. is Professor Emeritus with the Department of Environmental Engineering Sciences, College of Engineering University of Florida. He served as Associate Dean for Academic Programs from 1990 to 2003, and prior to that was Chairman of the Department of Environmental Engineering Sciences.

Mark L. Hammer is Professor Emeritus of civil engineering and is an author of environmental engineering publications in the United States and Saudi Arabia. During his long tenure as a professor at the University of Nebraska-Lincoln, Dr. Hammer also served as the Director of the Environmental Protection Agency Grant in Water Quality Control.

Elizabeth M. Perez has degrees in Environmental and Civil Engineering. Her specialties include hydrologic and hydraulic modeling, geographic information systems, ecological engineering, stormwater modeling, and watershed management.

Paul A. Chadik brings background of degrees in Chemical and Environmental Engineering and 23 years of teaching and research in water and wastewater treatment. He is a member of the faculty of the Department of Environmental Engineering Sciences at the University of Florida.



Chemical Engineering

Bioprocess Engineering

Bioprocess Engineering: Basic Concepts, 2/e

Michael L. Shuler, Fikret Kargi

Pages: 576

Year: 2015

About the Book

This is the definitive, up-to-the-minute guide to systems management for every IT professional responsible for maintaining stable, responsive IT production environments. Top IT system management expert Rich Schiesser illuminates both the theoretical and practical aspects of systems management, using methods and examples drawn from decades of professional experience in roles ranging from data center leadership to infrastructure design. Schiesser covers every systems management discipline, every type of IT environment, and all elements of success: technology, processes, and people. This edition adds detailed new coverage of the popular IT Infrastructure Library, showing how ITIL's 10 processes align with the 12 processes Schiesser presents. Another new chapter addresses key issues related to ethics, legislation, and outsourcing. Additional new coverage ranges from managing wireless networks, VoIP, and "ultra-speed" Internet to strategic security and new approaches to facilities management

Contents

Part: I. Introduction

1. What is a Bioprocess Engineer?

Part: II. The Basics Of Biology: An Engineer's Perspective

2. An Overview of Biological Basics
3. Enzymes
4. How Cells Work
5. Major Metabolic Pathways
6. How Cells Grow
7. Stoichiometry of Microbial Growth and Product Formation
8. How Cellular Information is Altered

Part: III. Engineering Principles For Bioprocesses

9. Operating Considerations for Bioreactors for Suspension and Immobilized Cultures
10. Selection, Scale-Up, Operation, and Control of Bioreactors
11. Recovery and Purification of Products

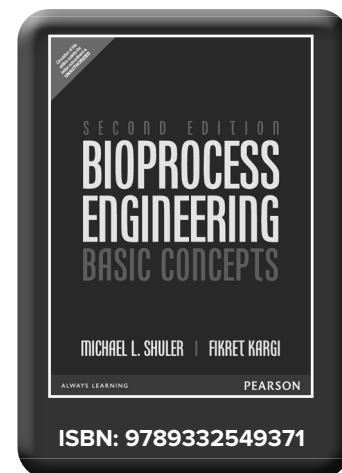
Part: IV. Applications To Nonconventional Biological Systems

12. Bioprocess Considerations in Using Animal Cell Cultures
13. Bioprocess Considerations in Using Plant Cell Cultures
14. Utilizing Genetically Engineered Organisms
15. Medical Applications of Bioprocess Engineering
16. Mixed Cultures
17. Epilogue

About the author(s)

Dr. Michael L. Shuler is Professor in the School of Chemical Engineering, Cornell University. His areas of research include structured models, heterologous protein expression systems, cell culture analogs for pharmacokinetic models, in-vitro toxicology, plant-cell tissue culture, microbial functional genomics, and bioremediation.

Dr. Fikret Kargi is Professor of Environmental Engineering at Dokuz Eylul University in Ismir, Turkey. His current research includes bioprocessing of wastes for production of commercial products, development of novel technologies for biological treatment of problematic wastewaters, nutrient removal, and novel biofilm reactor development.



Introduction To Chemical Engineering

Basic Principles and Calculations in Chemical Engineering, 8/e

David M. Himmelblau, James B. Riggs

Pages: 760

Year: 2015

About the Book

Basic Principles and Calculations in Chemical Engineering, Eighth Edition goes far beyond traditional introductory chemical engineering topics, presenting applications that reflect the full scope of contemporary chemical, petroleum, and environmental engineering. Celebrating its fiftieth Anniversary as the field's leading practical introduction, it has been extensively updated and reorganized to cover today's principles and calculations more efficiently, and to present far more coverage of bioengineering, nanoengineering, and green engineering.

Offering a strong foundation of skills and knowledge for successful study and practice, it guides students through formulating and solving material and energy balance problems, as well as describing gases, liquids, and vapors. Throughout, the authors introduce efficient, consistent, student-friendly methods for solving problems, analyzing data, and gaining a conceptual, application-based understanding of modern chemical engineering processes. This edition's improvements include many new problems, examples, and homework assignments.

Features

- Thoroughly covers material balances, gases, liquids, and energy balances.
- Contains new biotech and bioengineering problems throughout.
- Adds new examples and homework on nanotechnology, environmental engineering, and green engineering.
- All-new student projects chapter.
- Self-assessment tests, discussion problems, homework, and glossaries in each chapter.
- Power Points and instructor's solutions manual available for course use.

Contents

Part I: Introduction

1. What are Chemical Engineering and Bioengineering?
2. Introductory Concepts

Part II: Material Balances

3. Material Balances
4. Material Balances without Reaction
5. Material Balances Involving Reactions
6. Material Balances for Multi-Unit Systems

Part III: Gases, Vapors, and Liquids

7. Ideal and Real Gases
8. Multiphase Equilibrium

Part IV: Energy

9. Energy Balances

10. Energy Balances: How to Account for Chemical Reaction
11. Humidity (Psychrometric) Charts and Their Use

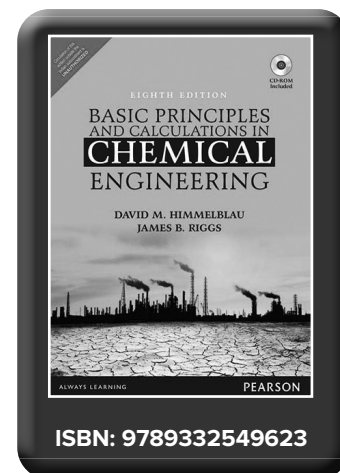
Part V: Supplementary Material

12. Analysis Of The Degrees Of Freedom in a Steady-State Process
13. Heats of Solution and Mixing
14. The Mechanical Energy Balance
15. Liquids and Gases in Equilibrium with Solids
16. Solving Material and Energy Balances Using Process Simulators (Flowsheeting Codes)
17. Unsteady-State Material And Energy Balances

About the author(s)

David M. Himmelblau was (until his death in April) the American Petrofina Foundation Centennial Professor in Chemical Engineering at the University of Texas, Austin. The author of sixteen books, his areas of research included the use of artificial neural networks for fault diagnosis and data rectification.

James B. Riggs is Professor in the Chemical Engineering Department at Texas Tech University, where he directs the Texas Tech Process Control and Optimization Consortium. His books include Chemical Process Control, Second Edition and An Introduction to Numerical Methods for Chemical Engineers, Second Edition.



Chemical Process Control & Safety

Chemical Process Safety: Fundamentals with Applications, 3/e

Daniel A. Crowl, Joseph F. Louvar

Pages: 736

Year: 2013

About the Book

As chemical processes have grown more complex, so have the safety systems required to prevent accidents. *Chemical Process Safety, Third Edition*, offers students a more fundamental understanding of safety and the application required to safely design and manage today's sophisticated processes.

The third edition continues the definitive standard of the previous editions. The content has been extensively updated to today's techniques and procedures, and two new chapters have been added. A new chapter on chemical reactivity provides the information necessary to identify, characterize, control, and manage reactive chemical hazards. A new chapter on safety procedures and designs includes new content on safely management, and specific procedures including hot work permits, lock-tag-try, and vessel entry.

Features

- New chapter on Chemical Reactivity.
- New chapter on Safe Design Features and Procedures.
- Extensively updated content.
- Additional homework problems.
- Power Point Slides and an instructor's solutions manual available for course use.

Contents

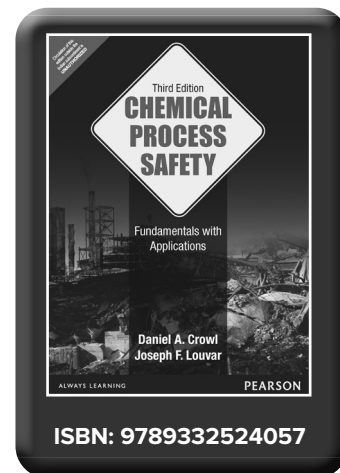
1. Introduction
2. Toxicology
3. Industrial Hygiene
4. Source Models
5. Toxic Release and Dispersion Models
6. Fires and Explosions
7. Concepts to Prevent Fires and Explosions
8. Chemical Reactivity
9. Introduction to Reliefs
10. Relief Sizing
11. Hazards Identification
12. Risk Assessment
13. Safety Procedures and Designs

14. Case Histories
- Appendix A: Unit Conversion Constants
Appendix B: Flammability Data for Selected Hydrocarbons
Appendix C: Detailed Equations for Flammability Diagrams
Equations Useful for Gas Mixtures
Equations Useful for Placing Vessels into and out of Service
Appendix D: Formal Safety Review Report for Example 10-4
Appendix E: Saturation Vapor Pressure Data
Appendix F: Special Types of Reactive Chemicals
Appendix G: Hazardous Chemicals Data for a Variety of Chemical Substances

About the Author(s)

Daniel A. Crowl is Herbert H. Dow Professor for Chemical Process Safety at Michigan Tech. He serves on the AIChE Center for Chemical Process Safety (CCPS) Safety and Chemical Engineering Education (SACHE) Committee, and is author/editor of several AIChE books on process safety.

Joseph F. Louvar is Research Professor at Wayne State University's College of Engineering, where he teaches chemical process safety, risk assessment, and process design.



Chemical Process Control: An Introduction to Theory and Practice

George Stephanopoulos

Pages: 720

Year: 2015

About the Book

A thorough overview of all aspects of chemical process control — process modeling, dynamic analyses of processing systems, a large variety of control schemes, synthesis of multivariable control configurations for single units and complete chemical plants, analysis and design of digital computer control systems.

Features

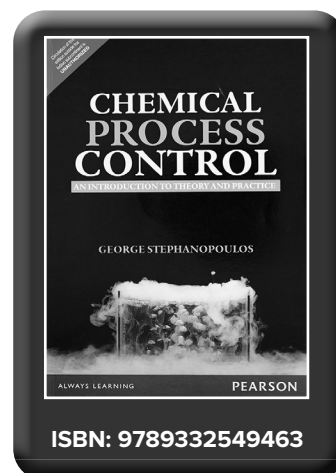
- Emphasizes problem formulation, analysis of posed control problems, and the synthesis and evaluation of alternative control systems.
- Provides a complete understanding of control design and implementation rather than a mere list of mechanistic tools.
- Discusses both controller design concepts and hardware elements needed for practical implementation of various control schemes.
- Emphasizes controllers' actions and their relative advantages and drawbacks.

Contents

1. The Control of a Chemical Process: Its Characteristics and Associated Problems
2. Modeling the Dynamic and Static Behavior of Chemical Processes
3. Analysis of the Dynamic Behavior of Chemical Processes
4. Analysis and Design of Feedback Control Systems
5. Analysis and Design of Advanced Control Systems
6. Design of Control Systems for Multivariable Processes
7. Process Control Using Digital Computers

About the Author

George Stephanopoulos, MIT



Transport Phenomena

Transport Processes and Separation Process Principles (Includes Unit Operations), 4/e

Christie John Geankoplis

Pages: 1040

Year: 2015

About the Book

Appropriate for one-year transport phenomena (also called transport processes) and separation processes course. First semester covers fluid mechanics, heat and mass transfer; second semester covers separation process principles (includes unit operations).

The title of this Fourth Edition has been changed from Transport Processes and Unit Operations to Transport Processes and Separation Process Principles (Includes Unit Operations). This was done because the term Unit Operations has been largely superseded by the term Separation Processes which better reflects the present modern nomenclature being used. The main objectives and the format of the Fourth Edition remain the same. The sections on momentum transfer have been greatly expanded, especially in the sections on fluidized beds, flow meters, mixing, and non-Newtonian fluids. Material has been added to the chapter on mass transfer. The chapters on absorption, distillation, and liquid-liquid extraction have also been enlarged. More new material has been added to the sections on ion exchange and crystallization. The chapter on membrane separation processes has been greatly expanded especially for gas-membrane theory.

Features

- The comprehensive, unified, up-to-date guide to transport and separation processes.
- A more thorough coverage of momentum, heat, and mass transport processes and new coverage of separation process applications.
- Greatly expanded coverage of momentum transfer, including fluidized beds and non-Newtonian fluids.
- More detailed discussions of mass transfer, absorption, distillation, liquid-liquid extraction, and crystallization.

Contents

I. Transport Processes: Momentum, Heat, And Mass

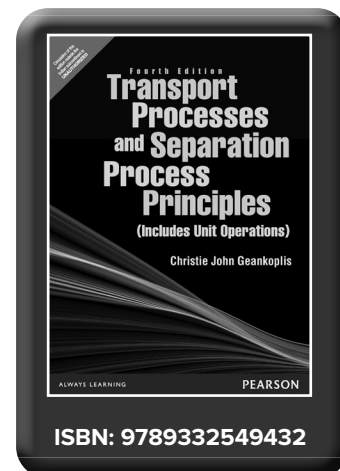
1. Introduction to Engineering Principles and Units
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6. Principles of Mass Transfer
7. Principles of Unsteady-State and Convective Mass Transfer

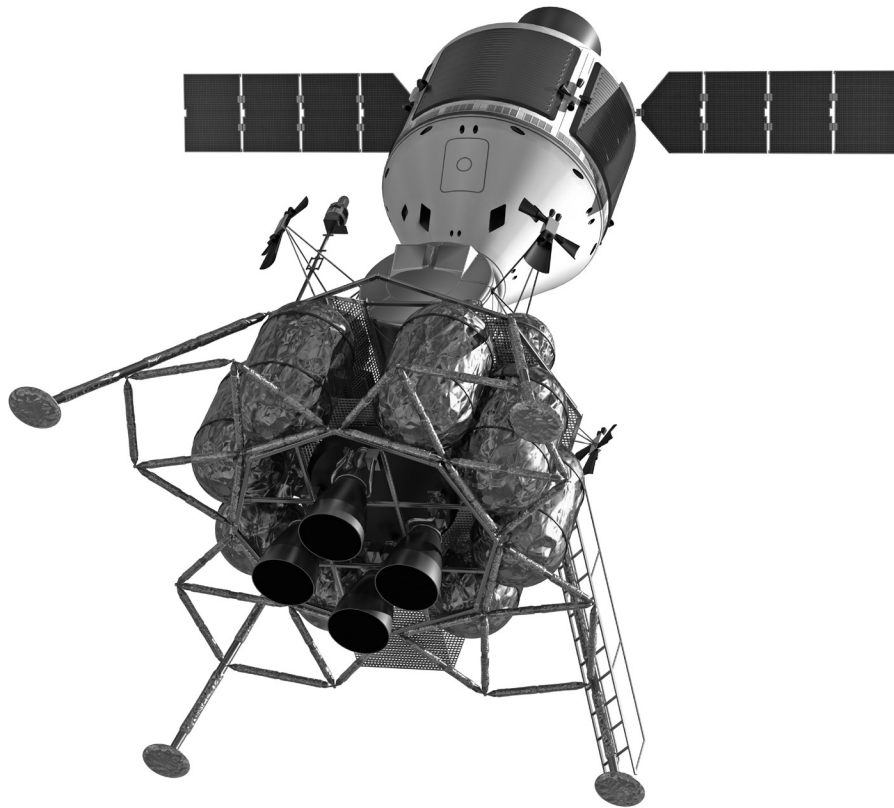
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12. Liquid-Liquid and Fluid-Solid Separation Processes
13. Membrane Separation Processes
14. Mechanical-Physical Separation Processes

II. Separation Process Principles (Includes Unit Operations)

About the author

Christie John Geankoplis is a Professor of Chemical Engineering and Materials Science at the University of Minnesota. His current research interests involve transport processes, biochemical reactor engineering, mass transfer in liquid solutions, and diffusion and/or reaction in porous solids. He holds a Ph.D. in Chemical Engineering from the University of Pennsylvania.





Aeronautical Engineering

Aeronautical Engineering

Mechanics of Flight, 12/e

A.C. Kermode, R.H. Barnard, D.R. Philpott

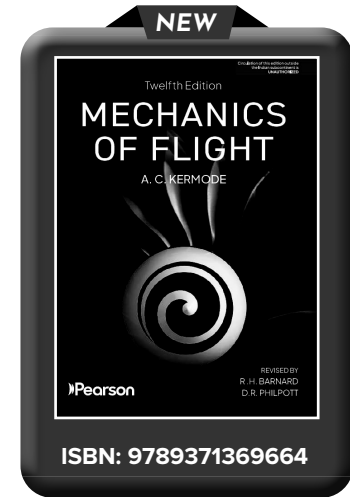
Pages: 512

Year: 2025



About the Book

Mechanics of Flight is an ideal introduction to the basic principles of flight for students embarking on courses in aerospace engineering, student pilots, apprentices in the industry and anyone who is simply interested in aircraft and space flight. Written in a straightforward and jargon-free style, this popular classic text makes the fascinating topic of aircraft flight engaging and easy to understand. Starting with an overview of the relevant aspects of mechanics, the book goes on to cover topics such as air and airflow, aerofoils, thrust, level flight, gliding, landing, performance, manoeuvres, stability and control. Important aspects of these topics are illustrated by a description of a trial flight in a light aircraft. The book also deals with flight at transonic and supersonic speeds, and finally orbital and space flight.



Features

- This twelfth edition has been fully revised and updated to conform to current teaching practices and to cover recent technical developments in the field. Aspects of unmanned aerial vehicles (UAVs) are covered, and additional material on the use of computational fluid dynamics (CFD) is included.
- Descriptions are aided by the use of a large number of diagrams, illustrations and photographs.
- Each chapter contains numerous practice questions to test and develop the reader's understanding of key concepts.
- A full appendix of numerical questions is supplied together with solutions.

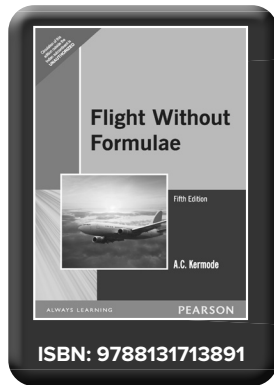
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1. Mechanics
2. Air and airflow – subsonic speeds
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4. Thrust
5. Level flight
6. Gliding, landing and low-speed flight
7. Take-off and climb
8. Manoeuvres
9. Stability and control
10. A trial flight
11. Flight at transonic speeds
12. Flight at supersonic speeds
13. Space flight

About the author

A. C. KERMODE CBE, MA, CEng, FRAeS / R. H. BARNARD PhD, MA, CEng, FRAeS / D. R. PHILPOTT PhD, CEng, MRAes

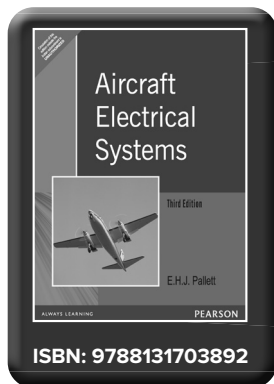
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